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Part First.

ORIGINAL COMMUNICATIONS.

ARTICLE I.—*Procidentia of the Pelvic Viscera.* By J. MATTHEWS DUNCAN, M.D.

UNDER this heading we propose to treat various forms of one affection, various species of one genus. It is certain that, when one organ or viscus is procident—that is, is displaced beyond the natural limits of the pelvic cavity—it is not alone, but other organs accompany it. In the present state of our knowledge, it is a mere accident which organ is primarily procident, or is alone procident; and it is this accident which guides practitioners in naming the species of this great disease, the procidentia of the pelvic viscera.

The procidentia of the uterus is, for evident reasons, the grand procidentia; and the reader may keep this in view when no special procidentia is named.

When the uterus is procident—that is, when it temporarily or permanently lies external to the vaginal orifice, in whole or in part—the procidence is not of the uterus alone, but of the pelvic viscera. When the uterus is procident, the bladder, rectum, vagina, tubes, and ovaries, are all carried in a greater or less degree in the same direction along with it. It must be so. The uterus occupies a central position among the pelvic viscera; it is large, readily felt and seen, and procidence of the pelvic viscera not unnaturally gets the name of uterine procidentia. The other pelvic viscera are not procident merely because the uterus is so. The organ which is most movable is most or primarily procident, if any organ can be said to be primarily procident when all descend more or less exactly together. The uterus is not only central, but, in the majority of cases, also most mobile, and is therefore very frequently the primarily procident organ. In many instances it is the bladder which is the primarily procident organ. In few only is it the rectum. In still fewer is it the vagina.

Procidence of the pelvic viscera includes many diseases, which get distinct names from peculiarities of the procidence. They are,—procidence of the uterus through the vagina, commonly called procidentia uteri; of the vagina itself, commonly called prolapvaginæ; of the bladder through the vagina, commonly called vaginal cystocele; of the bladder through the urethra; of the posterior wall of the vagina, with or without the adjacent rectal wall, through the vaginal orifice, commonly called vaginal rectocele; of the rectum through the anus, commonly called prolapse of the rectum; of the uterus through the anus. All of these affections, and some others, have many points in common, probably nearly an identical etiology; but, in speaking of procidentia of the pelvic viscera, we shall under that designation refer only to procidence ot the uterus, vaginal cystocele, and vaginal rectocele, or combinations of them.

This procidence is a common affection—a stock disease with the gynækologist. It is seen in its most aggravated forms only among the poor and hard-working. It is, however, in its minor forms, or in its threatenings, very common in all classes. It specially affects women who have borne children, and more especially women who have had large families. It is commoner among the elderly than among the young, but it may occur at any age.

Among twenty-two cases of procidentia, whose ages I have noted, two were aged respectively 15 and 17; three were aged respectively 60, 62, and 65; three were between 25 and 30; two between 30 and 35; five between 35 and 40; two between 40 and 45; one between 45 and 50; two between 50 and 55; two between 55 and 60.

In twenty-one cases I have noted the number of children born to the sufferers. Four had had no children; two had had 1; two had had 2; two had had 3; two had had 4; one had had 5; one had had 6; three had had 7; two had had 8; one had had 13; and one had had 14 children.

In the course of my remarks I shall say almost nothing of the minor degrees, or early stages of procidentia. These have been investigated chiefly so far as they affect the uterus, and get often the names descent and prolapse. They are frequently complicated by, or frequently (not always) consist in, states of retroversion, retroflexion, anteversion, anteflexion of the womb. Many modern and especially British authors flatter themselves that these last-named uterine conditions are discoveries of recent times—of the last thirty years; but this is far from being the case. In recent times much attention has been paid to them, and considerable additions made to our knowledge of them. Modern and especially British authors can justly lay claim to little more than to the discredit of attaching to these minor displacements an exaggerated importance—an importance for which they can even now adduce no evidence worthy of the name.

We shall now proceed to examine the condition of the parts which are prolapsed, and we shall suppose that we have before us the common, well-marked cases in which there is a large projection between the thighs.

The bladder is invariably procident if the uterus is so, and this follows from the intimate connexion between the two organs. They do not slip one upon or over another; both must go together. The bladder, or rather the lower or vaginal part of it, is frequently the only organ or part of an organ procident, vaginal cystocele; and in this case the uterus descends towards the floor of the pelvic cavity in whole, or its cervical portion chiefly, this part being elongated. The bladder is generally not even irritable; sometimes it is so, and the urine may be ammoniacal, and contain mucus and pus. The walls of the bladder are slightly thickened and hardened. The fundus of the bladder is displaced downwards, but not nearly to the same extent as its vaginal portion. The displacement downwards of the fundus of the bladder varies, and in this respect it has some correspondence as well as analogy with the uterus. The lower part of the bladder lies beneath the vaginal wall, covering the whole projecting mass in a case of vaginal cystocele, or beneath the anterior vaginal wall in a case of uterine procidentia. Wherever the uterine cervix is, there is the bladder in close apposition to it, in front.

I have seen it stated that a great French pathologist believes cystocele may take place without downward uterine displacement. I have never seen such a condition; and as I have not seen a circumstantial account of the occurrence, which is admitted to be excessively rare, I am not disposed to place much confidence in the assertion.

The rectum is sometimes, even in cases of great uterine procidentia, almost unaffected. Its connexion with the vagina is much looser than the corresponding connexion anteriorly of the bladder and vagina, but its connexion is still sufficiently close to make it impossible to believe that its position is quite natural in a case of large uterine procidence. Yet the fact remains that its displacement in these circumstances is sometimes so inconsiderable that the finger introduced through the anus discovers no downward pouching of the anterior wall into the procident mass. In many cases of large uterine procidentia, however, there is such pouching easily felt. But the descent of the rectum is much less than that of the bladder. Vaginal rectocele is less common than vaginal cystocele, yet it is not rare. It differs from vaginal cystocele in being occasionally the solitary well-marked displacement. Vaginal cystocele is often, indeed generally, the first step of uterine procidentia; it is always accompanied by uterine descent. Vaginal rectocele sometimes occurs without any other extensive displacement. Piles may be absent; they are seldom large.

The vagina is the organ most affected in the procidentia. If one organ were called to give a name to the procidentia of pelvic viscera, in its common forms, the vagina deserves such place. In all great procidences it covers or invests the whole procident viscera. It becomes hypertrophied when it has been long procident, especially in its inferior parts, that is, those parts which are normally superior. Its rugæ get smoothed out. It is of a pale reddish colour, which may approach dark purple if the congestion is considerable. It is little sensitive. When the procidence is permanent, the vagina, or rather its mucous membrane, is often inflamed. This inflammation is said to end often in ulceration, sometimes even in sloughing and the consequent formation of vesico-vaginal or recto-vaginal fistula. These inflammations and ulcerations are often extensive, often in patches. They are said to be produced by friction and by the irritation of urinous irrigation.

The whole subject of these inflammations and ulcerations demands renewed study. I am quite sure that friction and urinous irrigation are not the causes of the inflammation and ulceration. The position of these ulcerations is sufficient of itself to show the error of this *a priori* notion. Indeed I am satisfied that, in the majority of instances, friction and urinous irrigation have little or nothing to do with it. No doubt extensive ulcerations are often seen. But for many cases the whole of this pathology is a series of errors. Many of these so-called ulcerations, how many I do not know, are not what they appear to be. They are red inflamed parts, covered by a pellicle of lymph or diphtheritic membrane, whose contraction raises around the red portion a redder and prominent margin, which increases the likeness of the whole to what is known on the skin as a callous ulcer. This diphtheritic pellicle may frequently be raised and peeled off. Sometimes it dries and forms a translucent, horny, hard, elastic plate, which becomes at last spontaneously detached and thrown off. That this is the true pathology of many so-called ulcerations of the vagina and cervix uteri in cases of chronic procidentia I am sure, for I have carefully observed and verified instances. Perhaps it is the pathology of most. I have seen a case of procidentia with a small superficial ulcer become diphtheritically inflamed on a considerable surface, including that which was ulcerated. Then gradually, within twenty-four hours, a lymphy pellicle has been formed over it, covering up the ulcer and its neighbourhood with a whitish tough layer, which soon thickened to the dimensions of a thick croupy membrane. This membrane I have observed to contract and raise the edge of healthy mucous membrane surrounding it. I have peeled it off and discovered the ulcer and the inflamed mucous surface below the membrane. The parts so denuded have been again covered with the diphtheritic membrane. As time has advanced, the membrane loses its white appearance, and becomes dirty gray, like the base of a callous ulcer. All this has gone on without the patient's having anything like the constitutional disease called diphtheria, indeed without any grave disturbance of the health; but this point I have not attended to with sufficient minuteness. The final termination of these diphtheritic inflammations may, no doubt, be ulceration.

I have already said that, when the anterior wall of the vagina descends, it always carries the bladder with it and the uterus also, at least to some extent. When the posterior vaginal wall descends it may descend extensively—not wholly of course—alone, without any evident descent of the uterus or of the rectum.

When the vagina is chronically procident, it becomes, where not ulcerated, hard and dry, with a pale yellow-red tint. It is said to be like skin, but in truth the likeness is not very close, as any one will find who examines.

The urethra has its direction changed. It passes directly backwards from the external orifice towards the cavity of the bladder. Not unfrequently it has a curvilinear shape, with the concavity looking downwards.

The os uteri is unchanged in young virgins, especially, I believe, if not yet begun to menstruate, and in old women who have the uterus atrophied; and I suppose that in these cases the atrophy has preceded the procidentia. No doubt the ordinary condition of the os in procidentia is that of wide openness, partly from hypertrophy of the lips of the os, and partly from separation of them by the vagina pulling on them. This separation leads to an extroversion of the arbor vitæ. The os is generally filled by transparent colourless cervical mucus, but the mucus may be opaque from age, or it may be muco-purulent, or it may be tinted with blood or mixed with blood. Sometimes the os is temporarily closed by lymphy or diphtheritic exudation, which covers it and adjacent parts more or less extensively.

In most cases of procidentia uteri, the os, gaping, with its darkened, moist surfaces, which are often ulcerated, is a prominent feature. But in virgins and old women it has sometimes to be looked for, being small and having nothing about it to attract the eye of the spectator. Indeed I have known it to escape observation, and error in diagnosis to occur in consequence.

The lips of the cervix may be unchanged or simply flattened out in cases occurring in young virgins and in very old women. Sometimes they are nearly healthy even in menstruating women. But generally—that is, in the great majority of cases—they are greatly turgid and hypertrophied, sometimes ulcerated and much everted. The lower or projecting part of the cervix then has a great bulk, equal in circumference to that of the largest hen's egg, and assumes a very alarming appearance. Not very rarely one or more mucous polypi are attached to it. Hypertrophic elongation of the infra-vaginal portion of the cervix sometimes takes place.

When the whole uterus is frankly procident, the mass of the cervix uteri may be unchanged. This simple simultaneous procidence of the entire uterus is not rare. But it is more frequent for the procidence not to affect all parts of the uterus equally, and then the exaggerated procidence affects the cervix. If the cervix is to be further procident than the body of the organ, it must be elongated: it cannot separate itself from the body. The elongated body of the cervix does not hypertrophy: it is consequently thinned, and the fingers grasping the prolapsed mass feel the cervix within it like a hard cord as thick as the little finger, joining the infravaginal portion to the uterine body. As the bladder is generally procident before the uterus, it is the anterior uterine wall that is generally first and chiefly pulled upon, and in the early stages may be exclusively or chiefly elongated. The amount of elongation varies. An ordinary amount is to the length of nearly four inches. The elongation is, to some extent, like the stretching of an elastic substance, and partially disappears when the organ is replaced. I have seen it described as entirely disappearing; but this is certainly a mistake,—I have found a uterus which was elongated to six inches reduced only to four inches, after a week of replacement and rest in bed.

The body of the uterus is always displaced downwards to some extent, but frequently its prolapsus is arrested while its cervix and other viscera continue to descend, the cervix becoming elongated and accompanying the latter. In four cases out of thirteen in which I noted this point, the uterus descended frankly, the length of its entire cavity from os externum to fundus being 2½ inches or less. In one woman, æt. 40, its length was only 1 inch, the uterus being either congenitally very small or else extremely atrophied. The most frequent length of the entire uterine cavity I have found to be 5½ inches. But I have observed it 3½, 4, 4½, 5, 5½, 6, 6½ inches, in cases which were uncomplicated. In complicated cases it may be longer.

The uterus may be adherent to the neighbouring parts. It may contain a fibroid or fibroids. It may be adherent to an ovarian tumour. When frankly procident it may be retroverted or retroflected within the procident mass.

The ovaries must be displaced downwards. I have generally found it impossible to make out their situation during life. But occasionally I have felt one or both descended far into the pelvis, by searching for them with the finger introduced per anum. They are generally situated near the fundus uteri, and often a little above it.

The bowels descend with the fundus uteri in cases where that part is only inconsiderably prolapsed. But they rarely form part of a procident mass, descending only to fill up the void in the upper part of the pelvic cavity. When they come lower they fill up Douglas's space and increase the bulk of the procidentia.

The peritoneum is of course displaced with the organs which it covers. The commonest great change is the increased depth of Douglas's space, the peritoneum occasionally reaching down behind the cervix nearly as far as the bladder does in front.

The uterine and vesical ligaments are all put upon the stretch, and altered in position and direction according to the position of the parts to which they are attached.

The mode of production of procidentia of the pelvic viscera may be compendiously observed in any case of chronic procidentia. The procident parts are replaced, and the woman is asked to bear down and again protrude them. Thus a displacement which may have taken years for its gradual first production may be reproduced before the eyes of the observer in a minute or less; and the general course of the reproduction is the same as that of the original production, except as to speed. Mechanical forces gradually or quickly produced it at first; the mechanical force of bearing-down rapidly reproduces it after replacement, and at desire.

Eminent gynækologists, chiefly French, maintain that it is impossible to make a satisfactory vaginal examination, or at least a complete one, without performing it while the woman stands in the erect posture. This is rarely necessary. Of course, if it is desirable to know the exact condition, as to place, of the pelvic viscera while the woman is standing, then the examination should be made while she is in this position. But for all practical purposes, in the great majority of cases, the usual position on the left side is the most convenient; and, generally, it is in no cases more convenient than in cases of procidentia. If the vulva is exposed and the organs are replaced, then the procidence can be conveniently reproduced by bearing-down effort; and the same is true not merely of procidence but of every degree of prolapse. I have never known a case of procidence which the patient could not easily reproduce while lying down, by bearing-down effort. Indeed, bearing-down will easily reproduce a procidence which is not reproduced at once by standing or walking; the bearing-down being a more powerful force than the depressing force produced by the erect position maintained for a short time.

If, then, cases are so studied, the following observations are made:—Most frequently the bladder is first protruded, bulges largely; the uterus, following in a rough way the axis of the pelvis, clothed with soft parts, then comes to protrude, the cervix jerking over the anterior edge of the distended perineum; then the whole mass, including bladder and very little of rectum, is procident. The bladder so advancing may be accompanied by all the parts of the uterus simultaneously; but generally the uterus does not so follow frankly, but, being reluctant, has the tissues of its cervix stretched and elongated, and the uterine body then only makes a comparatively small amount of descent, remaining within the cavity of the pelvis. It not very rarely happens that, instead of the mode of production above described, another is followed. The uterus, frankly, or with all its parts simultaneously, descends; its cervix presents at the os vaginæ and is the part first procident, the uterus being primarily procident; then the whole pelvic organs descend together as the large and complete procidentia is formed. Occasionally, instead of the modes of production above described, a different one is followed. The posterior wall of the vagina first protrudes at the vaginal orifice; it may be alone or to some extent, seldom largely, accompanied by the rectal wall; then the bladder may follow, or the uterus may be procident before the bladder; and lastly the complete procidence is performed.

In slighter cases of procidentia, the bladder alone, or the posterior wall of the vagina alone, or the recto-vaginal wall alone, may be procident. In these cases there is generally some prolapse of the other pelvic viscera; always, so far as I have observed, when the bladder descends; not always to any marked degree when the recto-vaginal septum or the posterior vaginal wall descends.

When the body of the uterus is fixed and does not descend, as may be the case when it has extensive adhesions to parietal peritoneum or to an ovarian tumour, or when it is enlarged by a fibroid, then the descent may take place as already described, with this exception that the uterine body does not fall. In these circumstances the uterine cervix may become elongated; but probably the most frequent procidentia is of the posterior vaginal wall, in these circumstances.

A great French author of last century described the function of parturition as purely mechanical. So I regard the production of the various procidentiæ which I have been describing. Their cause is purely mechanical, as is that of the birth of a child or the production of a hernia. Indeed, this procidentia may be classified as a genus of the great family of herniæ. When I said that bearing-down efforts, reproducing the procidentia of recently replaced pelvic organs, gave the process of production in epitome, I meant the statement to include the etiology. The mode of original production is not in every respect exactly imitated, nor is the cause of the rapid reproduction identical with the original cause; it is not voluntary bearing-down alone which produces procidentia, but it is mechanically caused, the causes being in their nature truly imitated by bearing-down.

The purely mechanical nature of the cause of procidentia is well illustrated in the early history of many cases. Then, as is well known, the simple change of position from standing up to lying down is sufficient to produce replacement of the organs—to produce temporary cure. A mere mechanical change, standing up, does in these cases produce the disease: a mere mechanical change, lying down, cures it, for the time.

There is no doubt that, in the immense majority of cases—probably in all chronic cases—the causes which produce procidentia have been long acting, gradually elongating the attachments or so-called ligaments of the displaced organs, and gradually stretching and elongating the organs themselves, or parts of them. No doubt a violent effort may produce a procidentia suddenly; but such procidentia will disappear as suddenly if the woman has no natural proclivity to the disease; and if she has such natural proclivity, the violent effort has only hastened what was otherwise likely soon to occur. If a uterus is pulled down violently by the surgeon, he must exert great force, and he brings it only as far as the vaginal orifice. The greater the speed with which he brings down the organ, the greater the force he must use. In the dead subject, a force of from 20 to 50 lbs., or even more, may be required to produce a prolapsus by pulling down the uterus. Probably quite as great force is required to produce a sudden procidentia or prolapse in the living female. The womb pulled down in the living or dead female, or suddenly pushed down, resumes its natural position when the displacing force is withdrawn. In most cases of procidentia, the displacing force is comparatively slight, but slow in its action. The uterus, like the fœtus, may be expelled quickly by strong pains or forces, or more slowly by weak ones.

I have placed side by side the etiology of hernia and procidentia, and I believe these two affections have close relations. When the retentive power of the abdomen is gradually or suddenly diminished, or when its contents are powerfully compressed, then the weakest part will, of course, yield, if any part yields. In this way, piles are often gradually formed, or a hernia is suddenly or more slowly produced, or the pelvic viscera descend, and, the cause continuing, may ultimately become prolapsed or procident. In this way, piles, prolapse of the rectum, herniæ, may be accidents which may be called alternative—the occurrence of one taking the place of the occurrence of the others. This subject may come to receive support from statistics of these various diseases. For instance, it may be shown that herniæ are more common in males than females; and this may be accounted for by the descent of pelvic viscera in woman affording the alternative for many herniæ in males.

The uterus is often and justly described as to some extent a floating organ. The forces which, in their just equipoise, maintain it in its natural position, and maintain, likewise, the other pelvic viscera, may be deranged in two ways. The elevating or retaining forces may be in excess; and then the uterus and other organs are drawn high up, unnaturally elevated. This is often seen, so far as the uterus is concerned, in old age. The retaining forces may be diminished, or the expelling forces may be predominant: then the uterus and the other organs will descend. That which is most easily displaced will descend first, and the rest will follow in the exact order, and in the exact direction, of the facility with which they may be depressed. The so-called ligaments of the organs may be sufficient permanently to resist the depressing forces: generally they only offer a temporary resistance. They are all composed of structures which yield under continued tension, and yield to a great extent. Relaxation of so-called ligaments is, and must generally be, an effect, not a cause, of procidentia.

The causes to which prolapse and procidentia are usually ascribed are, either powerful expelling forces, such as bearing-down, lifting heavy bodies, hard work, whose action is easily comprehended, or are conditions which weaken resistance to the downward course of the viscera. Among the latter are child-bearing, diminution of fatness, menstruation, leucorrhœa. Fat in great quantity in the anterior abdominal wall generally prevents prolapse, increasing the retentive power of the abdomen. Laceration of the perineum is often adduced as a cause of procidentia; but it acts exclusively by facilitating the occurrence, shortening the route which the descending organs have to describe, and removing the last barriers to their morbid progress.

The symptoms of procidentia of the pelvic viscera are well worthy of study, and the most remarkable fact, not rarely verified, is that there are no great or serious symptoms. Of course women suffering in this way are distressingly aware of the procidence, and must be great sufferers from the physical annoyance of the morbidly situated parts; but it is not rare to find they have no other complaint. The presence of other symptoms may be elicited from them; but it not rarely happens that the physical annoyance and the symptoms combined press so little upon the poor woman that she either cannot be, or is with difficulty, induced to have anything done for her relief; and this is not the ordinary behaviour of sufferers from female complaints.

The most common complaint is of the discharges from the procident viscera. Then, a considerable proportion complains of difficulty and sometimes of pain in making water. Irritability of the bladder is not frequently observed. A frequent complaint is of pain in the back, and pain or feeling of dragging in the loins, extending often downwards into the thighs. Difficulty in defecation is not frequently complained of, but it is often present, and specially liable to be great in cases where there is anterior pouching of the rectum and constipation of the bowels.

Women suffering from any degree of procidentia are often in the habit of supporting the parts while urinating or defecating. They find assistance from so doing, as is easily understood. In cases of relaxed rectum with procidence of its anterior wall through the vagina, defecation may be almost impossible, unless the procidence is repelled during straining at stool. Of course, the difficulty occurs only when the stool is not soft, and the difficulty increases with the hardness of the elongated cylindrical fæcal mass. So great does this difficulty become at times, that the fæces have to be scooped out of the rectum by the finger or other appropriate tool, as the handle of a tablespoon. The cause of the difficulty of passing hard fæces is easily understood by reference to the physiology of this part of the function of defecation. The course of the fæces, which, above the sphincter ani, had been forwards and downwards, becomes at that point somewhat abruptly changed to nearly directly downwards, and the well-constituted healthy rectal tube directs the fæcal mass as it ought to proceed. But if, just above the sphincter, the rectum is relaxed, especially if, either during defecation or at all times, there is pouching of the anterior wall of the rectum in that situation, then the fæcal mass, instead of being guided downwards to the anal orifice, passes onwards into the vaginal rectocele, and is pushed, as if it were to be evacuated through it. I have been told by intelligent women suffering from vaginal rectocele, of this tendency of the stool to force out the rectocele, and of the comparative facility of defecation when the rectocele was repressed.

On the diagnosis of procidentia I shall say almost nothing. Mistakes are impossible, if due care is taken, even by the most inexperienced practitioner. Yet I have known errors to occur, polypi and vaginal cysts being mistaken for procidentia. The facility with which the positions, absolutely and relatively, of the bladder, uterus, vagina, and rectum, can be ascertained, renders any grave mistake inexcusable, at least under any circumstances that I can at present imagine. To describe diagnosis would be merely a dry recapitulation of physical changes, and is unnecessary.

If the preceding account of the etiology of procidentia is true, then the theory of the treatment is simple. It is a mechanical treatment, or a treatment with mechanical objects in view. But although the treatment is in theory simple, it is beset with practical difficulties. There is ample room and verge enough for skill and ingenuity; scope also for the exercise of highest wisdom. Is engineering to be the method resorted to? Is anything or nothing to be done? If engineering is required, what should be done, and how should it be done? Engineering in a living female is more difficult than in dead matter.

For practical purposes, cases may be divided into the slight and the aggravated. Slight cases are those wherein the disease is only temporary or occasional, and those where the procidentia is only to a small degree at the worst. Aggravated cases are those where the procidentia is great, and is, if not the permanent, at least a frequent condition.

Slight cases must always be regarded as likely to become aggravated if not appropriately treated. Slight cases may be treated without any extraneous mechanical appliances. Aggravated cases demand one or more extraneous mechanical appliances. These are the T bandage, a pessary, and a perineal operation. At one time an ingenious operation was proposed (and I have tried it), which might have been serviceable in both slight and aggravated cases, but the advantages expected from it have not been realized. It consisted in separating the connexions of the coccyx on the one side, and the sphincter muscle and perineal central fibrous raphe on the other. Its object was simple and intelligible. It was hoped that the lowest or anterior part of the floor of the pelvis, over which the descending viscera have to pass, would be elevated. The uterus, for example, instead of sliding down a smooth inclined plane to the vaginal orifice, a plane leading forwards and downwards from the apex of the sacrum, would then, near the apex of the sacrum, meet with a plane inclined somewhat upwards, and so inclined as to assist in barring further morbid progress.

It is easy to understand how, in slight cases, slight remedies may act beneficently, satisfactorily, and efficiently. Among these slight remedies are maintenance of the horizontal position for weeks, especially avoidance of long standing; regulation of the bowels, especially securing their easy evacuation; avoidance of hard work, such as lifting heavy weights; the arrestment of leucorrhoea or menorrhagia, or any other means of strengthening the vaginal canal, doing away with relaxation; the diminution of the weight of the uterus or of its cervix; any means of increasing the retentive power of the abdomen.

The maintenance of the horizontal position for some time may act advantageously in a variety of ways. Ligaments which are elongated when the uterus descends, or tissues which are relaxed or stretched, may get time to acquire shortness or density, while the viscera are, by the recumbent posture of the woman, prevented from assuming a morbid position. The uterus, especially after recent delivery or miscarriage, may get time to lose weight, and therefore tendency to descend. Congestion of vessels, which may tend to injurious relaxation, may be cured.

Straining at stool or in urination always aggravates a procidentia. Many women think it is the cause of the procidentia, and to a great extent they think justly. Many women never have procidentia except when straining at stool. The avoidance of this then is an evident gain; and for its avoidance the knowledge and skill of the physician are taxed. He should produce soft, easily-discharged, regular stools, by medicines or dietetic regulation, avoiding the general evils entailed by the habitual use of powerful laxatives.

Hard work, such as lifting heavy weights, is a cause of the most aggravated procidentia. There is no doubt that in the early history of many such cases, the evil might have been averted by the avoidance of this cause of it. The continuance of hard work renders the cure in all cases extremely difficult and insecure, in some cases impossible. Poor women, finding themselves unable to procure a livelihood except by hard work, are sometimes unfortunately constrained to give up hope of cure. Such is the imperfect state of our methods of relieving this class.

The relaxing influence of menstruation, leucorrhoea, and menorrhagia is well known. In connexion with procidentia their influence is, no doubt, chiefly exerted on the vaginal walls. The increased firmness of this and of other neighbouring parts may impede or prevent descent. It is therefore desirable to remove leucorrhoea or menorrhagia, and to restore the tone of the vaginal walls by medicines, baths, or by mild local astringent applications.

The weight of the uterus as a whole, or of its different parts, may be increased by various diseases, and the injurious influence of such increase must be apparent to all. The cause of the increase should be carefully investigated and the appropriate treatment applied.

It is well known that increase of weight of the uterus, whether healthy or morbid, is often accompanied by little, if any, descent. The influences which may counteract the inevitable tendency to descent are little understood, and present great difficulties in their investigation. It is probable that what has been called the retentive power of the abdomen is the chief agent; and it would be a great discovery to be able to increase this power at will. There can be little doubt that, in many women, this power is diminished by stays or other means of compressing the abdomen, chiefly at its upper part; and it is easy to have all such injurious compression removed. The expansion of the base of the thorax may increase the retentive power of the abdomen and act beneficially against a procidentia.

For severer cases of procidentia, remedies must be used which are stronger in their effects than those enumerated above. The bull must be taken by the horns. One of the most valuable of these stronger remedies I have fully described in two papers recently published in this Journal. One of these is entitled "The Function of the Perineum in Procidentia Uteri," and is to be found in the number for February 1871. The second, entitled "The Restoration of the Perineum," appeared in the last November number. This operation bars the way against the descending viscera, and is often successful, even when unaided by other means of assisting it. But there are few cases in which the use of such means should be omitted.

I have seen a cure effected by disease without surgical aid. Peritonitis affecting replaced parts has been followed by strong parietal adhesions, powerful enough to maintain the viscera in a high position within the pelvis without extraneous aid.

The T bandage, properly made and applied, pushes on the perineum, pushes it towards or against the symphysis pubis, and tends thus to close up the outlet of the vagina against the descending organs. It is easy to conceive that the efficiency of this pressure will be great in proportion to the length and completeness of the perineum. The T bandage is therefore very valuable when worn after the operation of restoration of the perineum. If the vaginal orifice is large, it is not likely to be of much use, for then the organs slip past it or by the sides of it: it does not check their progress when pressing on the vaginal orifice, as it does when pressing on a restored perineum.

There are considerable difficulties in the way of securing the advantages of the apparatus. It is irksome, or even painful, to wear at first, and until the wearer gets accustomed to it. If it be badly made, or ill fitted, it is simply impossible to wear it, if it is made tight enough to be efficient, on account of the pain it causes. Yet there is no doubt many women wear it, and find comfort from it, when it is a perfect sham,being utterly inefficient except as a source of mental comfort and feeling of security.

The object of this T bandage is to support the perineum. The stress of this support is borne by the horizontal limb of the bandage, which surrounds the pelvis over and above the haunch bones. This horizontal limb must be made to fit the parts like a kid glove on the hand. If it does so, a considerable strain can be put on it without pain resulting from the continuance of it. From the horizontal limb the vertical limb passes from behind, through the fork, to the front. It is tightened by a strap and buckle, and made thus to press on the perineum. At the part which touches the perineum is placed a pad, about an inch thick and about three inches long. This pad is covered with glazed leather, or other non-absorbent material, to prevent soiling. This is the pad which conveys the pressure from the vertical limb or under strap to the perineum.

Nothing has more exercised the ingenuity of surgeons than the making of pessaries for procidentia. That which I have found most useful is that which alone I shall describe. It is of the simplest possible construction, and its mode of action is easily intelligible. The best name describes it at once—a disc and stem pessary. The disc is passed through the vaginal orifice as a button is passed through a button-hole, and after having passed into the vagina, it is pushed up into the pelvis. Its flat or convex upper surface supports the viscera, which have a tendency to descend. Its upper surface is kept in this proper attitude to the superincumbent organs by the stem. Were there no stem the disc might turn so as to present its edge to the descending organs, and be itself pushed out through the os vaginæ in much the same manner as it was introduced. Fortunately it often happens that the disc, kept in proper position by the stem, gets somehow so indented into the vaginal wall, and the two get so consolidated, as to prevent descent, without any further aid. Many women are what is called cured by a properly-adjusted pessary alone. This pessary does not, like a globular pessary, dilate the vagina and keep it permanently dilated, and therefore injured. On the other hand, the vagina has a tendency to contract around it. It must therefore be frequently removed, so that it may not at length become incarcerated. This removal and replacement may be effected occasionally by the surgeon. Many women learn to do it for themselves, and remove the instrument every night on going to bed, and replace it in the morning.

This instrument may be made of boxwood with advantage. The material is light and enduring; but other materials may be used at will. The disc is like a bi-convex lens with blunted edges. Its diameter varies from 1½ to 3 inches. Various sizes are required in varying cases. To the lower surface of the disc is attached the stem, whose lower end is enlarged into a small globe of the size of a boy's marble. This part is so globularly constructed to obviate the evil effects of pressure of a small or sharp end. The length of the stem is about 2½ inches.

I have never seen a replaceable procidentia which could not be cured by one or more of the three means here described.

It appears to me, and it is contrary to opinions which are extensively acted upon, that a pessary should always be avoided if possible. The best pessary is a source of some irritation, often also of discomfort.

Before a pessary is introduced, the procident viscera have to be replaced; and it is advantageous to maintain the replacement by keeping the woman in bed for some time before the pessary is introduced. This allows of diminution of hypertrophy and healing of inflamed or ulcerated parts. Cleansing and soothing vaginal washes are useful during this time.

Replacement is generally easily accomplished, the parts being repelled in the direction opposite to that which they followed in their descent. Sometimes a little temporary difficulty is felt, from the fundus, being turned backwards, hitching or catching on the fourchette. When perimetric adhesions or parametric indurations are extensive, replacement may be for a time impossible, and its ultimate attainment may be reached with difficultly and by slow degrees.

ARTICLE II.—*Cases of Vesico-Vaginal Fistula.* By JOSEPH BELL, M.D., F.R.C.S., Surgeon to the Royal Infirmary, etc.

(*Read before the Medico-Chirurgical Society of Edinburgh,* 15*th November* 1871.)

CASE 1.—Mrs W., æt. 28, had been delivered by instruments after a labour of thirty hours. Extensive sloughing of bladder ensued as a result of the pressure, leaving a very free communication with the vagina and numerous puckered cicatrices.

In May and June 1868, Dr Matthews Duncan operated twice, with the effect of greatly diminishing the openings, closing one entirely. When he kindly asked me to see her in December 1868, the urine still escaped from two openings—one an oblique sinus about the size of a goosequill, between the os uteri and the orifice of the urethra. The anterior wall of vagina was very short, and consisted almost entirely of hard unyielding cicatricial tissue. Another very small sinus allowed a dribbling from the neighbourhood of the left spine of the ischium. This could not be brought into view at all from the hardness and narrowness of the canal.

In December, I operated on the lower and visible opening by cutting out the whole track of the sinus, making an opening into the bladder about three lines in length, and closed it by two silver stitches passed by the ordinary curved tubular needle with a handle.

On the 10th day I removed the stitches, and the wound seemed quite firm.

24th.—Another examination showed that a very small aperture still existed. This I found was one of the holes made by the needle in the dense cicatricial tissue. So, on

26th.—I again refreshed the edges of the aperture, and stitched it up by two points of suture, put in by very small curved needles, with groove sunk at each side of the edge. This time the orifice was healed.

This poor woman, however, cannot be considered as a perfect cure, as, though she can contain her urine for nearly an hour when sitting, there is still dribbling from the upper aperture referred to, the orifice of which I have never been able to see. Notwithstanding, I have divided as far as possible the cicatricial bands which limit the vagina. The above is from my note-book, but she again came under my observation in October 1871, and I found on further examination that a great improvement had taken place from the division of the cicatrices. The vagina is much softer and more distensible, and I obtained a good view of the upper and hitherto untouched aperture.

So, on 5th November, I again operated, and succeeded, after considerable difficulty, in exposing and closing the higher aperture with six stitches.

15th.—I have not yet removed them, but she is dry at present.

CASE 2.—Mrs J., æt. 35, the mother of three children, in her last labour about ten months before admission, in a labour of fourteen hours, in which instruments had been used, had received injuries from pressure, causing great destruction between bladder and vagina. Before I saw her she had undergone five operations by different surgeons. Much of the large aperture which had existed had been closed, but there still remained a deep broad aperture about three-quarters of an inch across, close up to the anterior lip of the os uteri, in the very summit of the anterior cul-de-sac of the vagina. The anterior lip was atrophied and denuded of mucous membrane.

On consultation with Dr Matthews Duncan, we agreed that the only chance of obtaining union was to unite the upper edge of the anterior wall of vagina to the posterior lip of the os uteri, and thus to pocket the uterus into the bladder, trusting that menstruation might still go on inside the bladder.

24th February.—This I did with very considerable difficulty (as the introduction of the duck-billed speculum forced up the uterus so much as to be out of reach), by dragging down the posterior lip of the os uteri with tonsil forceps. I pared it with Emmet's scissors, and then more easily pared the other edge of the fistula. The passing of the stitches was very difficult, and would, I believe, have been impossible, had I not prepared a number of steel points of various curves, which are welded on without any projecting shoulder to silver wire, and which I have found so useful that now I never use any other needle for these cases. I passed by these seven stitches deeply and firmly, and thus closed the wound. The operation lasted one hour and a half. Catheter inserted.

25*th*.—Patient quite dry. Very profuse urination by catheter.

1*st March*.—To-day we were disappointed, finding some urine come per vaginam.

3*d*.—Stitches removed. Examination showed that the bulk of the wound was soundly healed, only one central stitch having given way.

Patient had to go home to her family for a time, but returned on 5th June, when I examined her, and found the uterus retroverted, and the os uteri almost concealed in the bladder, the tip of the posterior lip only being visible through a small wound, and enabling the patient to retain her urine when in bed.

12*th June*.—To-day I operated again, paring the edges of the wound very freely, and brought them together again by four deep stitches.

20*th*.—Catheter removed. Stitches withdrawn. Patient quite dry.

4*th July*.—Dismissed *cured*.

Case 3.—Mrs K., æt. 30, had six children, was delivered of the seventh by forceps, after which a fistula, nearly one inch in length, in the anterior wall of vagina, extended from near the cervix forwards.

29*th March*.—I operated in usual manner. Five stitches.

8*th April*.—Removed stitches. Wound seemed nearly closed. Not absolutely dry, however.

15*th*.—Found a very small aperture in lowest portion of fistula.

22*d*.—Again refreshed the edges of the fistula. Five stitches.

12*th May*.—Removed stitches. Patient quite dry.

18*th*.—Dismissed cured.

Case 4.—Mrs H., from Leslie, after a lingering labour in which forceps had been used, but without violence, found that she could not retain her urine.

12*th May*.—I found a small oblique narrow fistulous opening in the anterior wall, about one inch to right of cervix uteri, and about two and a half inches from urethra.

16*th*.—Pared and closed fistula as usual with five silver sutures.

17*th*.—She took a bad epileptic fit, and, 18th, was violently hysterical.

30*th*.—I left the stitches in fourteen days, but removed them to-day, and found the fistula soundly healed.

This case was easy and promising from the softness and pliability of the tissues, little contraction from sloughing having taken place.

5*th June*.—She went home quite well.

Case 5.—Mrs C., æt. 30, after a tedious labour, has a small transverse fistula about two inches above urethral aperture. Vagina soft and mobile.

6th March.—Pared and closed wound with five stitches.

13th—Removed stitches.

22d.—Dismissed quite dry. *Cured.*

I have ventured to bring these few cases before the Society, partly to elicit, if possible, an instructive discussion on the principles which should guide us in the performance of this difficult and important operation, and partly to bring before its notice the little change, which I believe is an improvement, in the needle with which the operation is performed.

To obtain the success which fifty years ago was almost unknown, but which now may be hoped for in five cases out of six, if patient and surgeon have patience enough, the following seem to be the chief indications:—

1. A very thorough refreshing of the whole thickness of the edge of the fistula—not only the mucous membrane of the vagina, but the intervening tissue, and even the mucous membrane of the bladder itself.

2. That as far as possible all tension on the stitches should be avoided, and that for this end bands of cicatrix should be divided, and the bladder kept empty by the constant presence of a well-balanced lead catheter.

3. Metallic sutures should be used in every case where it is possible to apply them.

4. Absolute rest of part and patient,—bowels being kept unmoved and bladder empty for ten days at least, perhaps even for a fortnight.

With regard to the *modus operandi*, I give chloroform in every case; and, as a rule, operate with the patient lying well over on her left side, with the knees drawn up nearly to the chin.

The duck-bill speculum of Marion Sims can nearly always be used, and is of essential service.

Where the edges can be reached by a knife, I prefer it, either a sharp-pointed double-edged needle knife or an ordinary scalpel. I have not found much advantage from Emmet's knife with the ball-and-socket joint. When from cicatrization or depth of parts a knife cannot be used, the scissors curved in various directions, which Emmet describes and uses, are very good; but they are very expensive and not easily made from the difficulty of getting the curved edges to meet correctly. Long catch forceps are very useful to secure that any small fragment of edge be removed that may have been missed by the scissors. This is of vital importance for the success of the operation.

The tubular needles for passing silver wire are ingenious and not difficult to work, but have two very great practical disadvantages:—

1. They cannot be passed through first one edge and then the other, but the wire has in every case to be withdrawn from the needle, and the needle re-threaded. This is troublesome, apt to confuse the threads of silk, and, still worse, if metallic, apt to cause *kinks* in the wire, which are fatal to the success.

2. The tubular needle makes too large a hole. This does not matter so much when the mucous membrane is soft and elastic, but when it is cicatricial tissue which you are boring, the big hole remains like one punched out of leather. In one of the cases alluded to I had to operate again to close a needle-hole, after having closed the original fissure.

For these and other reasons the tubular needles are by many operators rejected, notably by Dr Emmet of New York, already alluded to. He uses small round needles, which carry a loop of fine silk, into which loop, after the needle is passed, a loop of fine virgin-silver wire is introduced, flattened by a strong pair of forceps for the purpose, and then pulled through.

I have, I think, made an improvement on this, so simple as hardly to deserve notice, but still of great practical assistance. I got Mr Gardner, the instrument-maker, to provide for me a series of steel points highly tempered, and curved in various sizes, some not larger than one-third of the circumference of a sixpence, others bearing the same proportion to a shilling, but all welded to the silver wire in such a manner as to project no shoulder and require no threading. I can manage these very easily, either by Sims's needle-forceps or by an ordinary pair of dressing-forceps, and, setting the wire at a right angle to the needle, and curving it round my hand and arm, it is really managed with great ease. The greatest assistance in the passing the needle is afforded by the use of the small hooks I now show, the invention, I believe, of Dr Marion Sims, one unbarbed, the other barbed: the unbarbed one assists in pulling down the mucous membrane after it is refreshed, for the purpose of introducing the needle; while the barbed one is useful in seizing the hard edges of the fistula and bringing them down within reach of the knife or scissors.

Four or six stitches to the inch will be needed, and, as a rule, I would advise that they should be left in for ten days or a fortnight, the bladder being kept empty during that time by the constant presence of a well-balanced sigmoid catheter of lead or block-tin, which can be bent to suit each individual urethra.

I will not venture to take up more of the valuable time of the Society with my remarks, nor shall I enter at all upon the history of this interesting operation, but merely mention that all the elaborate plans of buttons, wire-splints, plates, etc., regarding the priority of invention, of which controversies have been held, are gradually being discarded in favour of the simple and yet effectual means which I have briefly described.

ARTICLE III.—*On Leprosy at Hankow.* By GEORGE SHEARER, M.D.[1]

HANKOW, in the province of Hupeh, 30° 33′ N. lat., 114° 20′ E. long., one of the most important cities of Central China, and the greatest mart of trade, with a population estimated at about 750,000, lies on the northern bank of the Yang-tse-Kiang, at its junction with the river Han. It enjoys a slight but infinitely valuable degree of elevation over the vast surrounding plain from ancient alluvial deposits of a sandy loam, which admits of the rapid percolation and dispersion of moisture, and is therefore a salubrious site for human habitation compared with the stiff clay-bottom lands of the outlying districts. These are subject to annual inundations to the extent of 20 or 30 feet in depth during the autumn months, and from this region, as I purpose to show, the vast majority of the cases both of ague and leprosy are drawn. It is only at rare intervals, and during seasons of unusual flood—as during the years 1868 and 1869—that the city itself is submerged, and even then, from the porous nature of the subsoil, when the water once begins to subside, it does so rapidly and effectually, without the same deleterious consequences to the inhabitants, as in the slowly-draining and retentive soil of the plains. Few if any of the leprosy cases could be proved to have originated in Hankow. And few, if any, were derived from the neighbouring cities of Wuchang (the provincial capital, on the opposite side of the river) or Hanyang, both enjoying a range of elevation which, generally speaking, places them above the level of ordinary floods.

It has been remarked by persons who have resided both in America and China, that the ague of the Western States is a much more prevalent and much more formidable disease than the ague of China. And this may be accounted for to a great extent by the fact that the subsidence of the Mississippi flood takes place during the hottest months of the year, while that of the Yang-tse occurs during the cooler months of autumn.

During my two years' connexion with the native hospital at Hankow, I saw 610 cases of ague, including all the types, and 194 cases classed under the denomination Leprosy.

The leprosy cases were satisfactorily enough classified under the two natural types recognised by Winterbottom, viz., the anæsthetic and the tubercular.

At the end of my first twelvemonth's experience I published a report of some 117 cases, and advanced the novel theory which subsequent experience has amply confirmed, viz., this :—that leprosy, like ague, is an endemic disease, originating in the malaria of low-lying, undrained districts, and that the disease is curable by moving out of the infected districts into higher and drier situations. In one of the cases recorded, the disease had been arrested for a period of thirteen years, during the patient's residence in a dry, hilly region, and returned with great severity on his coming back again to live in the low-lying, marshy district where he originally contracted the disease. The following observations were also recorded:—

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[1] Part of this article appeared, as a sanitary report, in the "North China Customs Gazette" of April and June last.

1st. Of the thirty-four lepers all were males, and, I believe, without an exception, at some time or other agricultural labourers, "field hands," who of all classes are most exposed to the exhalations of the wet undrained soil of these provinces.

2d. The disease invariably commences with anæsthesia. Along with the loss of sensibility the vigour of the circulation in the affected part becomes impaired, the vital heat is lowered, the parts assume a leaden coldness, their nutrition and usefulness is diminished, wasting and contractions ensue.

3d. As the disease advances the sympathetic or nutritive nerves are implicated, and at length the motor.

4th. The lesion is therefore clearly traceable to the nervous system, and specially to the sensory strands proceeding from the anterior surfaces of the medulla oblongata and spinal cord. The frequent coexistence of facial paralysis from involvement of the seventh pair of cranial nerves, which springs directly from the parts named, lends weight to this supposition.

5th. The malady is essentially chronic in its nature, developing its ravages only after a long procession of years, never affecting the general health, but also, as far as I know, never relaxing its hold upon the victim. It seems, however, to arrest development and retard puberty.

6th. The affected parts never perspire. Coincidently with the dropping out of the hair, there is progressive atrophy of the sudoriparous and sebiparous glands of the skin.

7th. The simultaneous disappearance of ague and leprosy from Great Britain being coincident with the improvements in drainage of wet lands, marshy lands, etc., points to a common origin in malaria—a condition invariably coexisting with leprosy in China.

8th. Tonics and alteratives, in the form of liquor arsenicalis or corrosive sublimate, with generous diet and inunction of stimulating oils and unguents to the affected parts, proved highly useful in many cases. Change of air, the most important factor in the treatment, it was not in our power to command for our patients.

With the added experience of another year, I now submit a detailed statement of all the cases which have come under observation, with the conclusions grounded thereon, numbering in all—of anæsthesia 121, of leprosy 73.

As I think it demonstrable that the former is but the incipient stage of leprosy, I shall first speak of the anæsthesia cases.

There were nine cases of numbness of both hands; two of the right hand only, with imperfect control of the same; two of the thumbs and inner fingers; three of the left hand; one of left and left side; three of the arms and hands; six following t' tribution of the left ulnar nerve, with pain; one of right hand and forearm for a period of ten years, with partial paralysis of the same for a period of one year; four of hands, arms, and face; one of the face, which is now bronzed, quite destitute of sensibility, and bereft of the eyelashes and eyebrows; one of numbness of hands and feet for a period of thirteen years, with rheumatic pains in the extremities. The hair is dropping out, but there is neither ulceration nor eruption. There is nervous twitching and retraction of the left corner of the mouth and of the left eyelid, the sight of the left eye being impaired. One case of numbness of hands and feet for a period of one year.

Anæsthesia of the trunk following rheumatism, four; of the arms, five; of the feet and legs, nine; with rheumatic pains, six; of the thighs and legs, four; of thighs and hips, seventeen; of the shoulder, two; of face, hands, and feet, five; of big toe, one; of calf, one; of the soles of the feet, one; of the arms, with wasting, two; of half of scalp, two; intensifying numbness with debility (age 63), two; of the arms and legs, with dragging of the mouth and eyelids to one side, one; of the feet, with loss of power, four; "ma-mung" in patches, four; of the side of the foot, with pains in the elbows and soles, one; of the feet, with temporary lameness, one; numbness, pain, and debility in leg, one; numbness of inner aspect of hands, with weakness, six; numbness and paralysis of leg, two.

A boy, aged 18, had numbness of feet and face, with dropping of the hair, and scaly eruption; there were two cases of "ma-mung" or anæsthesia, irregular and scattered, with scaly eruption, which were cured by arsenic; four had numbness in irregular patches; one had intermittent "ma-mung;" one "ma-mung" of thighs, hips, legs, and feet affecting specially the extensor surfaces; one "ma-mung" of right cheek, with ptosis of right upper eyelid and paralysis of right buccinator. Two years before, the last patient had an insensitive spot on the abdomen, which, however, recovered its sensibility.

Contractions of the fingers of left hand, with numbness of a spot on right thigh. Numbness with erythematous blush over the affected skin of foot.

Young man, aged 25, with numb spot (3 inches square) on front of thigh for five years. Numbness of right foot and leg for two months. For twelve months has suffered from recurring attacks of ague.

Man, aged 50, with numbness of both legs and feet for six years. Toes like small puddings, with extensive ulceration and burrowing holes. Health good.

The ages ranged from 18 to 63. The patients were mostly of the male sex. The anæsthesia varied in degree from a preliminary loss of delicacy of perception of tactile impressions up to absolute loss of sensibility in the affected parts. These *never perspired.* In ten cases sensory was combined with motor paralysis, and in two cases with paralysis of the facial nerves.

Where both motory and sensory paralysis are observed in the same subject they are associated, and hardly ever separately affect distantly related parts; from which it may be inferred that both lesions originate in some mischief affecting the roots of the nerves.

Every part of the general integument appears to be liable to the loss of sensibility, the skin of the hands and feet pre-eminently so, and of all nerves, specially the ulnar. The inference is that the operating cause of the anæsthesia is to be found where the nerves issue from the spinal cord and unite their sensory and motor strands together.

It will be seen from the researches of Daniellsen that a morbid deposit is, in point of fact, invariably to be found in the internal organs of leprous subjects, that it specially affects the nervous system, assumes the form of chronic neuritis, is symmetrical, and prefers certain nerves to others—the sensory rather than the motor.

Of the above cases, anæsthesia, pure and simple, was observed in some cases to have existed for a period of five years, but there is no case amongst them where the anæsthesia, having lasted for a period of ten years, was unaccompanied by wasting, paralysis, and ulceration. These, in fact, constitute the connecting link with cases of true leprosy, of which I will now speak.

1. Aged 30, suffering from numbness of inner and ring fingers of left hand and thighs, with dropping out of the eyebrows and hair. Duration one year. A boatman.

2. Numbness for three years of arms, legs, and abdomen.

3. Numbness of fore, middle, and ring fingers, with sharp pains in shoulder and arm.

4. Numbness and ulceration of foot.

5. A fisherman, aged 40, for one year highly anæmic. Hands and feet numb, hair and eyebrows dropping.

6. " Ma-mung," *i.e.*, numbness, of patch on thigh with falling out of the hair, three years.

7. Leper, aged 38, but looks 50 at least, with ulcers, anæsthesia, and dropsical legs.

8. Leper, feet and hands numb, perforating ulcer of sole.

9. Numbness for eight years, sometimes better, sometimes worse, of hands and arms. Eyebrows gone. Cannot wash himself or use his hands. Cannot account for the numbness.

10. Agriculturist, numbness of little and ring fingers of left hand, also of a patch on the inside of right and left thighs, with weakness and pain in the knees.

11. " Ma-mung" of hands, feet, and face, numbness in patches over body, hair dropping out.

12. Field labourer, aged 23. Has observed the eyebrows thickened, itching, and numb for a period of six months, after which the hair began to drop away; the middle finger is numb, and there are numb patches on the right thigh and left ham.

13. Leper, aged 50, disease began with itching, then scurf, numb-

ness, and tubercles. Face broadening, leonizing. The numbness in the hands is exactly limited to the distribution of the ulnar nerve, and there is some degree of paralysis of the muscles of the mouth.

14. A female. Numbness of the hands, with dropping of the eyebrows and hair.

15. Bad case of leprosy, with enlarged glands in the groin.

16. Case of leprosy beginning with tubercular eruption.

17. Countryman, aged 49. "Ma-mung" for nine months of feet and face. Face covered with bronze-coloured itching eruption; eyebrows and hair dropping.

18. Numbness of shoulders and feet (aged 36), along with weakness and pain in the joints. Affected one year with dropping of the hair.

19. Numbness of the hands and feet for a period of five years. Dryness and cracking of the hands and feet, with scurfiness of the surface. Papular eruption of the face, with flattening and broadening of the features. The man is pockpitted.

20. Numbness of the feet, hands, and face, with scurfy eruption.

21. Leprosy-ulcers, healed rapidly after slight salivation with mercury, followed by a course of liquor arsenicalis.

22. Leper, aged 55, with complete insensibility of the hands and feet.

23. Incipient leprosy in a young man, aged 21, of one year's standing; commencing with numbness, it has now reached the stage of entire insensibility of the hands, feet, and face. Face becoming carnified and wrists thickened. Brother affected with ma-mung.

24. Anæsthetic leprosy. The general surface presents a number of bronzed reddish patches, with tuberculated, encrusted spots on arms, legs, and face. The eyes are ferrety.

25. Incipient leprosy in a man aged 35. Numbness of feet and legs with pain; right hand numb, wasted, and without strength.

26. Incipient leprosy in a man aged 50. He is strong and hale, but for five years his face and arms have been numb, and they are now quite destitute of sensibility. The face is bronzed. Eyebrows and eyelashes gone.

27. Leper, with a general eruption of white shining scales.

28. Leper, with swollen, numb face, nine months affected. Knotted, firm, internal jugulars.

29. Leper, aged 40; for six years the face has been numb and leonized; the hands, arms, and legs afterwards numb, with dropping of the eyelashes and eyebrows.

30. Leper, aged 50, with perforating ulcer of the sole and dropsical swelling of the foot. The ulcer healing and the swelling subsiding under arsenic.

31. Another similar to the above.

32. Leper, aged 35; five years a victim. The feet are numb, there is a large fetid ulcer on the sole of the right foot, and slight paralysis of the face, eye, and mouth.

33. Leper, aged 19. Deep perforating ulcer of heel and toe of the right foot, reaching to the bone, and punched-out looking. Foot, instep, and ankle numb; skin of knee ditto; also along the course of the ulnar nerves. The insensibility preceded the ulceration.

34. Leper, aged 39, of three years' standing. Two toes have dropped away, and there are two large fetid ulcers on the sole of the foot, which is numb, whilst the leg itself is wasted and trembles as in trembling palsy. There is numbness also of the right hand. Otherwise in good health.

35. Leper, aged 28, of two years' standing. Eyebrows and eyelashes gone, hair falling out. Ma-mung of hands, arms, and part of the body and face. Eyes ferrety, with arcus senilis. Face tuberculated and bronzed.

36. Agricultural labourer, aged 34, suffering for two years. Has no relatives similarly affected. There is a fetid ulcer of the sole of the left foot, and the interossei muscles and ball of the little finger are much wasted. The numbness began in the hands, and there are benumbed patches all over the trunk, but the face is free and the hair intact.

37. Man, aged 35. Complains of numbness without itching of the general surface of the body and extremities for three years past, and growing worse. Eyebrows and hair dropped. It is not inherited. The neighbourhood he lives in is regularly flooded year by year. There are three other lepers in the village.

38. Field hand, aged 47. Ma-mung of hands, face, and feet for one year, together with debility, following attacks of ague and dysentery. Not inherited. No dropping of the hair as yet. His place annually flooded.

39. Field hand, aged 27. Ma-mung of hands and feet, itching of the scalp and eyebrows, with partial dropping of the hair, and debility. Not inherited. Has had rheumatism, but neither ague nor dysentery. Place annually flooded.

40. Boatman, aged 52. Leprous for three years. A horribly repulsive sight. The man's features seem cast in bronze, with saffron coloured eyes. Face, hands, and feet numb, the cuticle of the latter granulated, and the legs and thighs covered with eczema.

41. Man, aged 42, a leather-dealer. Complaining for six months past of numbness of the hands and feet, with an itching, numb patch round the umbilicus, and another on the face. Reddened tubercles forming on the arms.

42. Young man, aged 24, suffering for six years from anæsthesia of the hands and feet, and for four years from perforating ulcers at corresponding points of the outer borders of both feet, near the root of the little toe. The muscular ball of flesh at the outer border of the right hand is wasted and numb.

43. Leper, aged 27. General anæsthesia, with scurvy, eczematous eruption over the body, and deep circular ulcer of the sole, set as it were in a ring of thickened cuticle. Right hand crippled;

left toes gone. He is a field labourer, and has been afflicted in this way for four years. Breath foul and offensive, with a mercurial fœtor. The numbness began in a spot over the left elbow, along with which the scaly eruption made its appearance.

44. Young man, aged 18, affected with ma-mung for five years. Complete insensibility of the thighs, legs, and feet, as also of the two inner fingers of either hand, supplied by the ulnar nerve. Face numb, skin of legs dry and unperspiring, in scaly plaits. Legs weak, eyebrows and hair beginning to drop. His grandfather had been affected with anæsthesia, but got cured of it. Father, mother, and other relatives quite free from it. Says that there are a number of lepers in his village. Anæsthesia reported as improving under the arsenical treatment.

45. A woman, who also works in the fields, affected with numbness of the left leg and arm, inner fingers of the left hand, and left side of the scalp, which is both numb and painful. She has been affected thus for a year. Hair dropping out. Skin free from rash or ulcer, but dry, rough, and unperspiring in the benumbed parts.

46. Leper, aged 40, a field hand. Complains of numbness of the hands and feet; face numb and fleshy, with falling out of the hair and eyebrows. There is thickening and hardening of the skin of the soles, with linear ulceration scoring them across.

47. Young man, aged 23, for ten months affected with symptoms of leprosy. There is ma-mung of the feet and legs, of the face and inner aspect of the forearms, and little and ring fingers, following the distribution of the ulnar nerve. The face is bronzing, and with the neck becoming full of erythematous tubercles. The skin on the back is becoming marked in a mosaic of white spots on a dark ground, without scale, eruption, or change of texture in the skin, a kind of marbling of the skin in different colours. He ploughs and sows the fields in a wet marshy district.

48. Farm labourer, aged 52, affected for a year with numbness of the feet and legs, hands and arms, face and ears. The insensibility is complete, and there is deep-seated aching in the bones. There is an eruption of broad, thin scales of cuticle on the legs, but no ulcers; skin harsh and unperspiring; no tubercles or eruption. There are nervous twitchings of the face, and mercurial fœtor of the breath.

49. Field labourer, aged forty, for three years affected with ma-mung of the extremities and face. He defines ma-mung as an itching of the skin when he is warm, and a painful condition of the same when cold, with a degree of numbness. The skin of the whole body is affected, but that of the feet and legs is worse, being insensible to pinching. The eyelashes and eyebrows, together with a portion of the "tail," have dropped. There are no ulcers, neither is there any rash, but a dry, harsh state of the cuticle which coheres in large flakes on the leg. In the morning, when he first gets up,

there is pain in the soles of the feet, but after walking about for a while this goes away. A pure case of anæsthetic leprosy.

50. Field labourer, aged 42, a leper, with immense fetid ulcers of the soles of the feet and big toes, the skin being enormously thickened around the edges of the same. Hands totally maimed, and fingers mostly dropped off. Yet in this case the hair and eyebrows have not dropped, and there is no thickening or other alteration of the features. He has been afflicted for fourteen years. Testes atrophied and soft. Ankles and insteps enormously engorged and thickened. There is a large circular patch on the back destitute of sensibility and power to perspire, and covered with thin, flattened scales.

51. Man, aged 27, suffering for four years from symptoms of leprosy. There is carnification, numbness and itching of the features, and dropping of the hair and eyebrows. He seems 40 at least. He has a heavy, oppressed look, and a remarkable hebetude of expression. There is a type other than this, where a leonine expression arises from the spreading equally over the features of the fleshy or carnifying substance, giving at once brawniness and breadth. This man's place is regularly flooded year by year. He slept on the wet ground one day and rose up with a chill. Three months afterwards he observed the eyebrows drop, and then the numbness of the extremities set in.

52. Leper, aged 43, looks like a man of 60, afflicted for the last twelve years with numbness of the hands and feet. Lives at Hwang-p'e, distant 70 li from Hankow. His legs and the soles of his feet are horribly ulcerated; the ulcers are of three years' standing. Eyebrows, eyelashes, and hair of the head fallen off within the last five years. The numbness began in two corresponding circumscribed spots on the knees, which gradually extended to the toes. The testicles have wasted in a very marked manner.

53. Carpenter, aged 58; mahogany-coloured tubercular swellings of the arms and chest for a fortnight past, attended with heat, itching, numbness, and some pain. On the buttocks and left arm the tubercles have coalesced into a general fleshy swelling of a dusky purple colour, and the use of the arm is impaired. This is the first and only case I know of which appears to have originated in Hankow.

54. A sailor, living in a country district 120 li distant from Hankow, subject to annual floods. Afflicted with numbness for five or six years past in the feet and legs, which never perspire, though the arms and body do. There is numbness also in patches of the general surface, the skin in these situations being of a deep vermilion tint, and covered by a thin, dry, scaly eruption. The thickened cuticle has given way in holes on the right sole, and corn-like masses are forming on the other sole. The thumb and two inner fingers of the left hand are numb, while the sensibility

of the little and ring fingers is unimpaired. The accurate manner in which the numbness is marked off is singular. Nose tinged deeply purple, and numb.

55. A man from Keangshi, aged 39. Has had ma-mung of the feet and legs, and of middle fingers of both hands, for a year or more. Face hot and itching, with evidently increased action of the bloodvessels; parts also a little insensitive. Hair and eyebrows dropping out. Face bronzed, heavy and fleshy, and small copper-coloured tubercles forming in the neck. Eyes reddened and congested. There is nervous twitching of the mouth, and he cannot whistle, while the mouth is contorted in the attempt (facial paralysis). He has worked in the fields for fifteen years.

56. A leper, aged 35, a victim for thirteen years. Numbness and total insensibility of the hands, which are lamed and crippled, and the tendons contracted. Face insensitive, lower eyelids everted, and inability to close the eyelids by a space of half an inch (paralysis of seventh pair). Buccinator paralyzed; mouth twisted to one side; raised red blotches on the skin; eyes ferrety and injected.

57. Incipient leprosy, man aged 50. Strong and hale, but for five years hands, arms, and face numb, now quite destitute of feeling; face bronzed, eyebrows and eyelashes gone.

58. Leper, aged 37. Subject to numbness of arms and hands, legs, feet, and face for a year and a half, which parts never perspire. He is partially bald, and the eyebrows are gone. On the affected parts the skin is dry, shrunken, and shrivelled, while that of the face is reddened, bronzed, and thickened. As yet there is no paralysis of face or limb, though he is too weak to follow the plough.

59. Leper, aged 20, with anæsthesia, thickening and ulceration of the skin of the feet, and contraction of the tendons. No eruption; no tubercle.

60. Incipient leprosy of five months' duration.

61. Leper for seven years. There are tubercles on the neck, psoriasis and pink discolorations of the skin, face broadening, and textures thickening and coarse. The eyes have a lurid glare. Eyesight impaired. There is numbness of the hip.

62. Field labourer, affected for five years past with numbness ot the hands and feet, legs and shoulders, with general itching of the surface, carnification of the countenance, falling out of the hair, eyebrows, and eyelashes, pearly white circular scaly eruption on the neck, double chain of enlarged glands in the groins, numerous marks of old cicatrices, but no history of syphilis.

63. Leper, boy aged 16; squat, square, and ill developed; testicles undescended, large ulcer on the legs, no eyebrows, bridge of nose sunk, face leonine and brawny, white scaly eruption on the neck. Numbness of the hands and feet, no itching, no tumours or tumefaction in the neck, nor enlarged glands in the groin. Father

a leper. Ulcers healed up under arsenic and astringent dressings, but within three months broke out afresh.

64. Leper, face leonine and brawny, eyelashes gone, eyes ferrety, rupia-like spots on the legs, gouty enlargements of the joints of left hand.

65. Leper. Corneæ undergoing granular degeneration, conjunctivæ and scleroticæ injected.

66. Leper, aged 31; three years a victim. Eyebrows and eyelashes gone. Curious punched-out looking ulcers on the soles, with enormously thickened cuticular edges. Great toe broadened and ulcerated. Face converted into a species of brawn. Left leg numb, and marked with coloured spots—the sites of old ulcers.

67. Leper; five years a victim. Perforating fetid ulcers and insensibility of the soles of the feet. Imperfect action of the lips and eyelids.

68. Leper, aged 30, four years ill, arcus senilis well developed. Feet and toes ulcerated, hands maimed, feet bronzed, general anæsthesia of the parts affected.

69. Leper, with ulcerated hand, and fingers shrivelled, contracted and bent inward on the palm like eagle's claws. Ma-mung of hands and feet, and paralysis of the motor nerves of the face.

70. Leper, a lad aged 25, affected for a period of seven years. Hands, feet, and face numb. Tissues thickened and bronzed, little finger of right hand dropped off, also distal phalanx of ring finger of left hand. The fingers taper and thin off at the tips, presenting in this respect a marked contrast to the clubbed finger-tips of phthisical patients. There is undoubtedly atrophy of the bulb and other textures of the fingers. Complains of numbness or imperfect wooden feeling in all the affected parts, which are also subject to itching sensations. Joints of both hands scarred (from burns), and rigidly flexed. Hair of eyebrows dropped; imperfect closure of left eye, and dragging of the mouth to right side. Scrotum, like the face, numb. Absence of hair from pubes. Testicles sound. No trace of venereal disease. Two ulcers, one in either palm, produced by pressure of the plough-handles on the insensible textures.

71. Leper; four years a victim. Deep dormant fetid ulcers in the sole of right foot, with thick coriaceous edges, thickening of the tissues on the dorsum of the foot, with bronzing, scaly scurf, and numbness. Left hand crippled and withered, as if from palsy. Every joint stiff as if anchylosed, and marked with white cicatrices indicating old ulceration. Seventeen years ago the hand became ulcerated and crippled from spontaneous ulceration, accompanied by anæsthesia, and it has never since recovered its normal condition. Otherwise he continued well till four years ago, when numbness was felt at the tip of the great toe, and a blister formed which broke and deepened into an ulcer. In the meantime he had removed from a more elevated and drier locality to Whampi, a low

level plain to the north of Hankow, where he originally resided, and had become first affected with leprous symptoms. The numbness and thickening of tissue extended at length from the toe to the knee. This case shows—1*st*, That leprosy begins with anæsthesia, and is followed by defective nutrition and loss of power in the parts concerned. 2*d*, Its progress is sometimes spontaneously arrested, as in this case, for thirteen years. 3*d*, The arrest appears to have depended upon his removal from a marshy locality to a higher and drier neighbourhood.

72. Incipient leprosy in a man aged 27. Numbness and eruption on the legs and arms for a period of two years. The eruption resembles psoriasis guttata—rounded spots covered with an aggregation of white scales, and revealing, when removed, a silvery basis. When cured, a dark discoloured spot remains. Eyelashes and eyebrows gone. Great loss of power in the arms and hands, and the parts affected with numbness never perspire. No trace of syphilis. The eruption is disposed in elegant curved lines, and concentric circles of geometrical exactness.

73. Leprosy, an agricultural labourer, 31 years old. When 10 years old had a sort of white scaly eruption, which left rupia-like marks on the hips, the affected parts being numb. When 14 years old the right hand became crippled; when 21, the left. The flexor tendons in the forearms are tense, and the muscular substance wasted up to the middle of the arm, where the muscular volume is sharply resumed. Palmar fasciæ tense. Finger-bulbs atrophied and flexed rigidly on the palm. Patches of leprous mahogany-coloured redness with minute chaffy scales on the surfaces of either forearm. Legs and feet, hands and arms numb. Face numb in patches. He cannot completely shut the left eye. Sensation diminished although not quite lost in the parts affected. General health good. Ten or twelve cases of leprosy said to exist in the same village.

74. Young man, aged 31, a leper. Painful sensations in the joints of the hands and feet, with partial anæsthesia of the hands and arms, feet and legs. Anæsthesia complete in the little and ring fingers of either hand, following the distribution of the ulnar nerve. From elbows to finger-tips and from knees to toes—that is, the whole of the parts affected—are dry, and scurfy and non-perspiring. The skin of the face is beginning to swell and redden in patches without numbness, but with much itching, and the hair of the eyebrows and head is beginning to drop. Has never had syphilis. Does mason's work, but is also occupied at the proper seasons in ploughing and sowing. No eruption, but the anæsthesia and loss of hair are proceeding rapidly, he being only one year affected. There is sluggishness in the opening and closing of the eyes and in the action of the muscles of the mouth, with nervous tremors of the muscles themselves when called into action.

Observation A. The whole of the foregoing cases were seen within a period of twelve months at Hankow. During a seven months' residence in Kiukiang, which enjoys a hilly situation and is seldom subject to inundations, not a single case has been seen.

B. Of the whole number, only one properly belongs to Hankow, and appears to have originated there, yet Hankow is notoriously subject to inundations. The immunity of the inhabitants of Hankow at once from ague and leprosy probably depends upon the sandy nature of the subsoil on which the city is built, which allows of a ready drainage and quick drying after floods and rainfalls. On the other hand, the stiff, tenacious clay of the outlying and surrounding districts retains the water on the surface in impermeable ponds and pools, in which both animal and vegetable life abounds, until the solar evaporation has converted the whole into a semi-fluid, festering mass of decay, the very hotbed of malaria. My experience at the Hospital in Hankow leads me to say that the ague cases, equally with the leprosy cases, were imported, and that to the best of my knowledge they were principally drawn from necessarily malarious localities, *i.e.*, where there is no natural drainage.

C. Of the anæsthetic cases not more than ten or twelve were women, and of the lepers only two. The vast majority of those afflicted followed one and the same occupation, viz., that of agricultural labour, in which they are necessarily exposed to the exhalations of the wet undrained soil in a degree far beyond any other class of residents in the same locality.

D. The whole of the foregoing cases may be conveniently arranged into three groups—

1. Cases of simple anæsthesia, ma-mung or impairment of nervous sensibility in a part or parts of the body.

2. Cases of anæsthetic leprosy, where the loss of sensibility is attended by eruption (pityriasis, psoriasis) or wasting and shrivelling of the skin and sweat-glands (hence the unperspirable condition of the affected parts), and ultimately by decadence of the hair, eyebrows, and eyelashes. Along with the external numbness there may or may not be internal and accompanying pain in the limbs; and when ulceration takes place, from improper contact with bodies, through lack of the warning protection afforded by the perfect sense of touch, the ulcers are comparatively easily healed. Contractions and atrophy of parts ensue. Facial paralysis is a common accompaniment both of this and the next form.

3. Cases of tubercular leprosy, where, in addition to the above symptoms, there is a local morbid deposit in the affected parts. When it occupies the subcutaneous tissues of the face and cheeks, the countenance assumes leonine breadth, a satyric stare, or seems as if cast in bronze. When under the eyebrows, the heavy, beetling brows give an expression of hebetude and oppression to the face as if the subjects of it were labouring, as in sad truth they do.

under some horrible incubus which they are powerless to shake off. Carnification or tuberculization of the lower extremities is apt to proceed to ulceration of a very peculiar description, burrowing deeply, with immense thickening of the adjoining corium, in some instances attaining a thickness of half an inch or so. Sometimes the eruption appears in detached copper-coloured tubercles, sometimes as a bronze or mahogany-coloured rash, whence the native name of "ma-mung," or spotted leprosy. Necrosis of phalanges and destruction of joints and limbs are the sequelæ of this form of the disease, and amongst the accompaniments may be mentioned swelling and pink injection of the conjunctivæ, impairment or loss of the sense of smell, hoarse, nasal, or croaking alteration of the voice, ulceration of the mucous follicles of the throat, with exceeding foulness of the breath, resembling the mercurial fœtor. The freedom from pain and suffering is no less remarkable than the absence of any derangement of the general health. In all, however, there is a marked deficiency of vital energy.

E. Since the publication of Daniellssen's researches on leprosy in Norway and Sweden, and his discovery of a peculiar morbid deposit in the internal organs, and specially in the nerves of persons who had died of leprosy,[1] we have been furnished with a clue to the

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[1] The lesions traceable to leprosic deposit Daniellssen found in nearly every organ in the body and especially in the nerves (the kidneys alone excepted). This chronic neuritis is symmetrical, and prefers certain nerves to others, and the sensory to the motor.

It is well to compare these statements, made on Daniellssen's authority, with the recorded results of the very few post-mortem examinations of leprous patients made by private practitioners. Thus, at page 60 of the College ot Physicians' Report, Mr Macnamara of Mozufferpore (Bengal) says—"I have made five post-mortems upon the bodies of leprous patients, my attention being more particularly directed to the nervous system, and neither in the nerves themselves nor in the brain and spinal cord have I been able to detect any lesion, either with the naked eye or by the aid of the microscope." Dr Mongeri of Crete, Dr Davy of Ceylon, and Mr Hutchinson of Victoria, have described the appearances after death, but seem to have been struck only by the excessive development of "tubercles" in the skin and serous and mucous membranes. In all three cases the larynx had specially suffered. Dr Carter of Bombay (R. C. P. Report, page 62) noted the results of sixteen post-mortems after death from leprosy. "In five cases where death was attributable to chronic dysentery, kidney disease was certainly present in two, and in a third fibrinous deposit was found. . . . Enlargement and diminished opacity are the fundamental changes which the nerves exhibit. The general cellular investment, the ordinary seat of neuromatous swellings, inflammatory and other formations, is here but little altered: the amount of enlargement varies from just above the normal size (at the seat of disease, above or below it the nerve may be smaller than natural) to more than twice that; the colour may be gray, reddish gray, reddish brown, or, very rarely, a dead opaque white; the consistence of all degrees, from almost flabby to semi-cartilaginous, but generally firmer than natural; marked vascularity is uncommon; adhesions have been found, but only under exceptional circumstances. The cutaneous nerves are altered in a similar manner, but are sometimes less rounded and firm. These changes do not occur indiscriminately in the course of the nerves, but make their appearance at certain selected spots—for the compound trunks connexion of the different forms. The cases of pure anæsthesia are traceable to leprosic deposit on or near the roots of the sensory nerves, and the tuberculous form of local deposits in the subcutaneous cellular tissue. This circumstance will help to explain both the peculiar character of the ulceration and its resistance to treatment.

F. While we are thus able to group all the forms of this disease into one category, and to say that they seem all to depend upon one condition, viz., leprosic deposit variously situated, the question arises whence is this diathesis or cachectic condition of the body induced. To this I think my experience allows of one answer only. A morbid condition of the blood is determined by breathing the impure air of certain malarious districts, and leprosic deposit with all its consequences is the result. In this respect the leprous diathesis is comparable with that of phthisis, which is remarkable for choosing two systems, the pulmonary and glandular, as the seat of deposit, rather than with the gouty and aguish diatheses, where the virus accumulating for a period at length explodes, as it were, in a gouty or aguish fit allowing of a temporary or it may be complete return to health. And just as phthisis and gout are unknown in the same individual, so leprosy and ague rarely, if ever, affect the same person. Leprosy is therefore truly an endemic disease, and in all probability originates in malaria.

G. There is no proof that it is induced by diet—fish diet or other food. There is not the least proof of any connexion between leprosy and syphilis.

H. It is transmissible hereditarily, though the fact has been rarely observed, and one is liable to the fallacy of confounding the effect of the endemic influences in originating the malady with its conjectural inheritance.

I. Its contagiousness is extremely problematical: in this part of China it is positively regarded as *non-contagious*, and lepers may at any time be seen in the streets and shops, freely mixing with the people, as small tradesmen, as water-bearers, as beggars squatting by the wayside. No lazar-house exists in these parts. The better-off classes in China, as in Norway, have the most perfect confidence in their own immunity from the disease even where lepers abound.[1]

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where they are most superficially placed, for the cutaneous nerves immediately after they have perforated the deep fascia. As regards the former, the nerve-trunk above the *locus morbi* may be unchanged; below it is usually atrophied, but occasionally almost normal in appearance and structure: the apparent extent of disease may be limited to two or three inches, but it is often considerably more; in both sets of nerves the terminal branches will be found atrophied and pearly in aspect, being, in well-marked cases, evidently incapable of performing their functions."

[1] This is strongly insisted on by Dr Bowerbank of Jamaica (Royal College of Physicians' Report of Leprosy, 1867; page 13.) He says:—"I do not believe it is contagious in any of its stages, nor do I believe it can be transmit-

J. The disease is said to be on the increase in Jamaica during the last twelve or fifteen years, because of the retrogression towards barbarism of the bulk of the population. Imperfect tillage, draining, and culture of the land furnish the essential conditions for the development of the marsh poison. There is historical evidence that leprosy once prevailed extensively in districts and countries from which it, as well as ague, has now disappeared; and I believe it to be capable of demonstration that the two disappeared simultaneously through the introduction of the modern system of drainage.

K. No. 71 is not the only case which has come under my observation of the arrest of the disease through change of residence. Of some others of a like nature the notes have been lost. Happily, however, the defect in the chain of evidence is supplied by a writer in a recent number of the *British and Foreign Medico-Chirurgical Review*, who says that the Norwegian physicians recognise the endemic nature of the disease, and the fact that immigrants take it or lose it by removing to or from infected districts. Strangers may contract the disease *de novo.* It is further asserted that Norwegian lepers emigrating to America get well of the disease, and no new cases occur amongst them.

L. Dr Beauperthuy of Trinidad has established a very successful method of treating leprosy in that island, of which the following are the leading principles:—A nourishing diet, with fresh meat and light wine twice a day; salt fish, beef, and pork, being prohibited entirely. Corrosive sublimate in doses of one-fifteenth of a grain is administered twice a day, and inunction of the whole body with oil of cashew or cocoanut is practised night and morning. The most important part of the system, however, consists in the removal of the patients from the neighbourhood of marshes. The results are satisfactory; the tubercles are entirely removed; the sensibility and power of movement in the paralyzed limbs are restored, and the general health is improved.

M. Until, therefore, the appliances of modern skill in the interest alike of agriculture and the public health are called into requisition, of which there is certainly but a very distant prospect at present, we cannot attack the evil at its source, or hope to do more than mitigate suffering and effect the cure of a certain number of cases. But this should by all means be attempted. And there surely cannot be much difficulty in finding amongst the upper ports of the river a suitable locality for the establishment of a sanatorium or lazaretto.

by sexual intercourse. I have known a man to live with his wife for sixteen or eighteen years after he had elephantiasis tuberculata, and have children by her during the time; he died in an advanced stage of the disease, but she never suffered. Two of the sons, however, were attacked. Again, I have known a man live for years with his wife, who was leprous, without his suffering."

ARTICLE IV.—*On Menstrual Coagula.* By JOHN HADDON, M.A., M.D., Eccles.

ABORTION is a very convenient name, and under it are classed many cases which have no claim to such a designation.

It is not so generally known as it ought to be, that blood may be retained in the uterus for one, two, or more months, without any untoward symptoms, until hæmorrhage begins, and the clot is expelled with pain and flooding.

Such cases as these may have, no doubt, the history, as well as some of the signs and symptoms, of abortion; and even the product may be mistaken for an aborted ovum—more especially if any of the decidual uterine membrane, which is seen in membranous dysmenorrhœa, be present.

I had not long been in general practice before meeting with cases which I supposed to be abortions, where, nevertheless, I could find no trace of any part of the ovum. There is no great harm in telling a woman in married life that she has aborted, where the symptoms of abortion were present, even though no trace of the ovum can be discovered. When it happens, however, as it did to me, that you meet with such a case in an unmarried young lady, you must pause and consider the case very minutely before even hinting at the possible occurrence of conception. I shall relate the case which led me to suspect that abortion may be in many cases simulated by an affection having its origin in some peculiar state of the menstrual function.

A. H., aged 28 years, and unmarried, states that, when sixteen years old, she had a fever, during which menstruation began. It continued normal till about the age of twenty, when, after sitting on damp grass, she had an affection of the uterus, which confined her to bed for some weeks. Since that time menstruation, though regular, has been attended with considerable pain, and followed by more or less leucorrhœa. She has also been subject to hysterical attacks in the form of convulsions. From April 1870, menstruation was regular every month, lasting about three days, and followed by copious leucorrhœa, which continued during the interval. She also complained of pain in the back and in the left side, was unable to walk much, and very subject to hysterical convulsions. She improved under general and simple local treatment. In June she had no hysteria, very little leucorrhœa, no pain, and was able to walk long distances.

On 12th September 1870, I was called in the night to see her. I found that, since June, she had been quite regular, with very little leucorrhœa, and had felt stronger than usual. On 1st September, which was her monthly period, menstruation did not occur. She did not feel ill in any way until 12th September. On that day she had pain in the abdomen, and was altogether out of sorts. During the night she became hysterical, and lay in a half-unconscious state. Her pulse was normal. There was no uterine discharge; but she complained of pain in the left inguinal region, which was increased on pressure. Over the tender part there was some fulness, and slight dulness on percussion. Poultices were applied, and she was confined to bed. The pain gradually subsided, but she was advised to stay in bed till the next period had passed. On 30th September she began to menstruate. On 1st October it became very profuse. I found her flooding, and was shown several clots the size of walnuts, which had been discharged. The face was pale and the lips blanched: the pulse was quick and weak. On vaginal examination, the uterus was found low down in the vagina, and quite movable; the cervical walls were thickened, the body larger than natural, and the os just open enough to admit the tip of the forefinger. Ergot was administered, and other means used to stay the flooding, which soon abated. The sanguineous discharge continued. She had occasional sharp pains in the back, and some difficulty in micturition. On the twelfth day from the beginning of the discharge, when it had almost ceased, a mass was passed which in shape resembled a cast of the interior of an enlarged uterus. On vaginal examination at this time, the uterus was higher up and larger than before—as large, indeed, as it would be in a two months' pregnancy. The os was open enough to admit the forefinger. After the appearance of the mass, to be described immediately, the discharge entirely ceased. She menstruated again in the end of October, and has been well since.

Description of the mass.—It was slightly pear-shaped, and as large as a small hen's egg. Its consistence was firm, and from its narrower end hung long shreds of fibrin. On section through the middle, a cyst was found in the broader part. This cyst was an inch in length, half an inch in breadth, contained clear serum, and was lined by a smooth shining membrane. Around the cyst the substance was of a dark red, almost a black, colour; while the outer part was of a firmer consistence, and paler in colour. No organized structure could be detected by the microscope.

Such is an account of the facts of the case. Had it occurred in a married person I should have thought it was an abortion, but as there was not the least suspicion of pregnancy, I was induced to give the case more consideration. There could be no doubt as to the mass expelled being an old clot of blood. What its age may have been is a matter of opinion; and some may doubt whether it was uterine. I am inclined to believe that it was formed in the uterus on 12th September, because when menstruation began the uterus was larger than natural, and continued to enlarge until the mass was expelled.

In April 1871 I met with the following case:—

CASE 2.—Mrs C——, aged 28 years, was married five years ago, and had a child in due course. She conceived again and was delivered of a healthy child at the full time. Eleven months after the birth of this second child, having been regular for five months, she did not menstruate for seven weeks. She then began to be poorly, and on the eighth day the doctor removed a mass from her womb.

The doctor called it a false conception.

During the seven weeks she did not menstruate she had none of the feelings she was accustomed to have at the beginning of pregnancy. In fact, she did not think that she was pregnant.

The next child was born a month past the full time in a state of decomposition.

Her last child, *i.e.*, her fourth, is thirteen months old, and healthy.

On 7th April 1871, she ceased to menstruate, having been ill eight or nine days. Her usual time is five days, and this month it not only lasted longer, but she had also a great deal of pain, which she was not accustomed to have. On 6th June, having seen nothing in the interval, she observed a pale discharge begin. On the 7th, it became sanguineous, increased, and went on till the 11th, when she also had something like labour pains. On vaginal examination the uterus was found larger than usual, low down in the vagina, the os the size of a shilling, and clots blocking it up. Ergot was given.

12*th June.*—The discharge continues, but is not so profuse. She has pains occasionally.

13*th.*—The os uteri is more open, and the discharge continues.

14*th.*—On examining to-night I found something filling up the widely dilated os. On removal it proved to be a pear-shaped mass the size of a small hen's egg, of firm consistence. On section a cyst was found in the middle, with a smooth lining membrane, and containing nothing except a little clear serum. The part around the cyst was darker than the circumference, but the whole exactly resembled the section of an old clot of blood. The discharge soon ceased after the mass was removed, and she was soon well. During the eight weeks she did not menstruate she had no feelings of pregnancy, and could not believe that she was pregnant.

In this case not a trace of any product of conception could be found. It was exactly similar to the clot met with in Case 1. There can be no doubt that it was a clot of blood. I took it from the uterus. Its age is a matter of opinion.

Thus, then, I concluded that clots may form in the uterus independent of impregnation, remain there for some time, and ultimately be expelled with all the symptoms of an abortion.

In looking through the literature of the diseases of women, I came upon Dr Granville's graphic illustrations of abortion and the diseases of menstruation, published in 1834. In this work t are plates of what he calls polymenorrhœic stratifications, which exactly resemble the two clots I have described. He says polymenorrhœa, by which he means profuse menstruation, may produce stratifications in the uterus.

Dr Graily Hewitt, in his book on Diseases of Women, says, "Coagula may form within the uterine cavity in connexion with uterine hæmorrhage of all kinds, after labour, in consequence of the presence of polypi, cancer of the uterus, profuse menstruation, etc.

"Coagula, not recent, may present a tolerably firm, dense, grayish, fibrinous-looking surface. The want of organization in the mass, and the presence of blood-corpuscles, would assist in the diagnosis of the nature of the substance. The centre of the mass, moreover, generally exhibits a clot of a darker colour comparatively unaltered, which was the original nucleus of the formation."

Again he says, "In some rare cases coagula of some size have been expelled from the uterus unconnected with the previous occurrence of conception."

In the Pathological Society's Transactions, vol. xv. page 169, a case in point is recorded.

The information derived from these two authors shows that it was ignorance on my part which led me to suppose that I had observed a class of cases not before described. Nevertheless, though I cannot strictly claim originality in this paper, I am convinced, from experience in connexion with a medical society of which I am a member, that the existence of such cases is not so well known amongst medical practitioners as it ought to be. Ignorance of the fact that such cases do occur may throw suspicion upon those who are perfectly void of offence, and blast the reputation of many a virgin.

Nothing can be more annoying than to harbour a suspicion which you dare not mention; and if this communication should relieve any one from such a position, it will not have been made in vain.

ARTICLE V.—*Clinical Lectures on Diseases of the Heart.* By GEORGE W. BALFOUR, M.D., F.R.C.P.E., Physician to the Royal Infirmary.

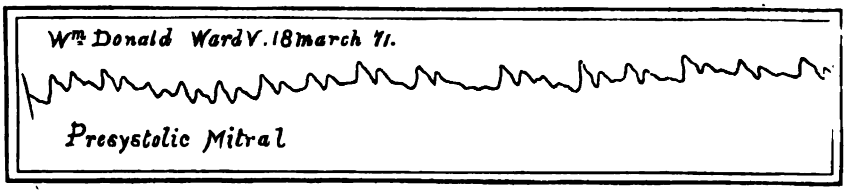
II.—*On the Murmurs and other Physical Signs Distinctive of Mitral Stenosis—continued.*

GENTLEMEN,—You have learned, I hope, from the previous lecture, that the essence of the cardiac affection in mitral stenosis is obstruction to the onward current of the blood at the mitral valve; and we deduce this from the fact that the only murmurs specially distinctive of this form of valvular lesion are those which, from the position at which they are best heard, are known to originate at the mitral valve, and which, from the time during which they are heard, are recognised as occurring occasionally during the ventricular diastole, but specially during that part of the pause occupied by the auricular systole. Now, these murmurs, as I have already described them, are perfectly distinctive of mitral stenosis, and when once the existence of one or other of them has been recognised, disease and deformity of that valve may be predicted, with a perfect certainty that it will be found after death. Unfortunately these murmurs are not always present, and sometimes, though occasionally audible, they are not always to be heard at the period of examination, that very time when it is of the greatest importance that a cardiac lesion should be recognised if present. In most cases the diastolic portion of the murmur is entirely wanting, and in many even the auriculo-systolic portion seems, if we can trust a hospital history of two or three years at least, never to have been audibly present at all; but, besides this, each portion of the murmur may vanish temporarily for a longer or shorter period, and this sometimes in a most remarkable and unaccountable manner. Further, as a necessary result of the condition of the valve in the most usual form of mitral stenosis (the diaphragmatic valve) we have regurgitation of the blood backwards into the auricle. In perhaps the larger proportion of such cases this regurgitation is unaccompanied by murmur; in a smaller proportion we have both the auriculo-systolic and the ventriculo-systolic murmurs constantly present; in a much smaller proportion we have these murmurs presenting themselves in an irregular fashion, both murmurs being present for one or two beats, the auriculo-systolic or the ventriculo-systolic, chiefly the latter, recurring alone for an irregular number of intervening beats; while in a certain number of cases, the exact proportion of which is as yet unknown, we have the ventriculo-systolic murmur alone and constantly persisting.

Such, then, are the variously complicated forms of murmur which may be heard in cases of mitral stenosis. It would be easy to narrate to you cases illustrative of each variety, but it is quite unnecessary, and would only oppress your memories with unnecessary details. So far as murmurs are concerned, those only are distinctive of mitral stenosis which have been already described, the essential part of them being the presystolic murmur; whenever that is recognised as persistent or can even be picked out as occasionally recurring amid a complication of other murmurs, the case is clear and wants no further proof. When, however, no presystolic murmur, or no murmur at all, can be detected, we are forced to unravel the case by a careful investigation of the various subsidiary phenomena evolved during the cardiac action, as well as of the relative condition of the different cardiac cavities, and the mode of propagation of any murmur which may be present. In this way we shall very freq be enabled to detect the stenotic condition of the mitral valve even where no murmur at all is present, or where the only murmur audible is one of regurgitation. And this branch of the inquiry is of all the greater importance that it is on the data obtained from it that our prognosis must in every case be founded; the mere diagnosis of mitral stenosis, so readily made in some cases, affording but one, and that in many respects the least important, element in such an inquiry.

Among the most remarkable of these subsidiary phenomena we must reckon irregularity of rhythm, which, always present, I believe, in a greater or less degree, becomes so marked in some cases as to constitute a diagnostic phenomenon of considerable importance. The cause of this great irregularity is not very evident; it does not depend upon dilatation of the left ventricle, which in pure mitral constriction is always rare and never excessive; it is often just as little marked in cases of great debility with dilatation of the right ventricle, as when we have the left ventricle, hypertrophied from secondary causes, acting well to the last, and the right ventricle comparatively unaffected. On the other hand, general debility seems to have some effect in developing it, and it is always lessened by means directed towards improving the general health and cardiac power, but it is chiefly the coexistence of pyrexia which produces its most striking development, and that quite independent of the amount of stenosis present; and it occurs in other forms of cardiac disease under similar circumstances, though never in so marked a degree; its true cause, therefore, would seem to be some lesion of innervation. Of course, in mitral stenosis the elements of irregularity, as I have already described them in connexion with the reduplication of the second sound, are so persistently present that it is no wonder that they should become preeminently manifest on the occurrence of any disturbing cause. The following diagram (fig. 1) graphically represents this extreme irregularity in a sufficiently marked manner.

Fig. 1.



Case 6.—The patient William Donald, aged 37, admitted into Ward V. on 10th March 1871, was a labourer recently working in a gaswork where he was much exposed to sudden alternations of heat and cold. He had always enjoyed good health till four weeks ago, when he caught a severe cold; since then he had been fever-

ish and ill, with gradually-increasing debility, some cough, and bloody expectoration. On admission he looked somewhat exhausted, his breathing was hurried, his pulse 120 and extremely irregular. On percussion the cardiac dulness was found to be normal, the apex beat being in the usual position. On auscultation over the mitral area, the first sound was found to be of slightly thumping character, impure, but unaccompanied by any bruit; no thrill was perceptible over the apex beat. Between the second and third ribs on the left side close to the sternum, the second sound of the pulmonary artery was heard greatly accentuated. Between the second and third ribs on the right side close to the sternum, the aortic second sound was found to be weakened. At the base generally, but most distinctly about mid sternum on a level with the fourth rib, marked reduplication of the second sound was to be heard. On percussing the lungs, over the left lung anteriorly, the upper portion was found to be natural, and the lower lobe somewhat dull; posteriorly there was a small dull patch about the centre of the scapular space, from the lower border of the scapular space the lung was dull. On the right side posteriorly there was dulness at the lower border of the scapular space, otherwise percussion over the right lung was normal; over the dull portions respiration was more or less obscured; over the other parts vesicular mingled with occasional coarse crepitating rattles. The expectoration was catarrhal, largely mixed with pure blood.

The diagnosis in this case was bronchial catarrh, occurring in a person affected with mitral stenosis, and culminating in pulmonary apoplexy.

The history of an ordinary febrile attack, accompanied by cough, catarrhal expectoration, and occasional coarse crepitation over the chest, persisting four weeks after seizure, sufficiently confirmed the first part of this diagnosis. The copious expectoration of blood, coupled with the existence of dull patches, over which the respiration was obscured, also confirmed the latter part of it.[1] While I based the coexistence of mitral stenosis upon—1*st*, the slightly thumping character of the impure first sound; 2*d*, the extreme irregularity of the pulse, which is so marked in no other form of cardiac disease that I am acquainted with; 3*d*, the reduplication of the second sound, which, though it is found under other circumstances, is never so persistent as in mitral stenosis; and, 4*th*, the weakened character of the aortic, and the strongly accentuated character of the pulmonary second sound. The first of these phenomena duly recognised by a practised ear is, I believe, quite pathognomonic of mitral stenosis, and is almost invariably associated with more or less irregularity of the pulse, though that is not always so extreme as it was in the present case; while the persistence of the third phenomenon described aided greatly, when coupled with the two former, in confirming the diagnosis, which was further strengthened by the subsidiary, and, from a diagnostic point of view, comparatively unimportant phenomena of pulmonary accentuation and hæmoptysis.

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[1] The occlusion of the bronchi passing through the hæmorrhagic masses preventing the development of bronchial breathing in such cases, thus in so far confirming Skoda's theory of the mode of origin of this phenomenon.

After admission, the patient gradually fell into a state of low muttering delirium, from which he was roused by the moderate exhibition of stimulants and the free use of digitalis. For a couple of days subsequently he seemed to rally, and faint hopes of ultimate recovery were beginning to be entertained, when symptoms of subacute peritonitis set in, and in two days afterwards he died, on the 20th March, ten days after admission, the cardiac symptoms remaining unaltered to the close. At the dissection, the small intestines were found matted together by recent lymph, they were congested and friable, and the omentum was adherent to their surface, three ounces of bloody serum being found in the recto-vesical pouch, etc. The heart weighed 17½ ounces; the right auricle was distended, the left auricle flaccid; both ventricles distended with black clots; the right ventricle was somewhat dilated, its auriculo-ventricular opening admitted seven fingers; the left ventricle was somewhat hypertrophied, its cavity not dilated; the aortic and pulmonary valves were competent; a small vegetation was attached to the corpus aurantii of the posterior cusp of the aortic valve. On laying open the left auricle several vegetations were seen encroaching on the auriculo-ventricular opening, one of them quite cartilaginous but movable, the other softer; the mitral orifice admitted two fingers easily, its aortic cusp was shortened and thickened, especially at its free margin. Each pleural sac contained about a pint of fluid. On the right side there were many adhesions, on the left only a few at the apex. The upper lobe of the left lung contained two dark-coloured solid hæmorrhagic masses just beneath the pleura, one two inches and a half from the apex on the posterior aspect of the lung, the other two inches and a half from the interlobular fissure on its anterior aspect; while its inferior lobe contained four similar masses, all just in contact with the pleura, two as large as an orange, the other two the size of a walnut; the largest was in the interlobular fissure, and extended down to the base, the second largest was in the posterior aspect of the lung. The apex of the lower lobe of the right lung contained four hæmorrhagic masses.

The post-mortem appearances, which are extracted from the pathological records of the Royal Infirmary, thus completely confirmed the diagnosis.

In the following very similar case the diagnosis was confirmed, fortunately for the patient not by any pathological research, but by the subsequent development of those bruits which are recognised as pathognomonic of the condition diagnosed.

CASE 7.—A. M., aged 31, admitted into Ward V. 23d March 1871. This patient had not previously suffered from rheumatism, nor from any serious illness, and had been always able for his work up to the commencement of his present attack, which dated only five days back. He had then been seized with shivering and slight febrile symptoms, accompanied almost from the first with hæmoptysis. He was somewhat breathless, with hot skin, some cough, copious bloody expectoration, pulse 120, extremely irregular, its sphygmographic tracing precisely resembling that of the former case. On examination his heart was found normal in size, the apex beating between the fifth and sixth ribs, slightly within the nipple line. The heart's action was extremely irregular, and on placing the hand over the apex beat, a thrill running up to the apex beat was occasionally, but not always, perceptible. On auscultating over the mitral area, the first sound was found to be somewhat impure and slightly thumping in character, but no bruit was audible. The pulmonary second sound was accentuated, the aortic somewhat weakened, the two sounds not being simultaneous, but presenting the phenomenon of a reduplicated second sound, most distinctly audible about mid-sternum, opposite the end of the fourth rib. The auscultation and percussion over both lungs was normal, except at the back, posteriorly in the infra-scapular regions, where over both lungs some dulness existed, and the vesicular murmur was much weakened, almost extinct. The diagnosis in this case was slight febricula, complicated with mitral stenosis and pulmonary apoplexy. He was treated with tincture of digitalis and squill, ten minims of each in water four times a day. Under this treatment the hæmoptysis gradually lessened, the pulse became somewhat more regular, and fell to 90, and after about a fortnight's treatment an ordinary presystolic murmur was heard in the mitral area, and a diastolic murmur became audible at the end of the fourth left rib, just where it joined the sternum, the reduplication of the second sound continuing to the last. He was sent to the Convalescent Hospital, and at the end of three weeks again readmitted for a slight exacerbation of his cardiac symptoms, but without hæmoptysis. The murmurs continued as just described, till he was discharged relieved, and declaring himself fit for work.

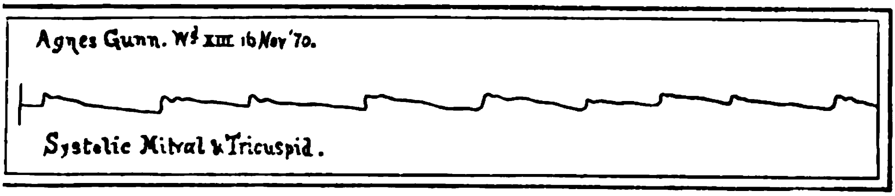
These cases exhibit in a marked manner the extreme importance of great irregularity of the pulse and cardiac action as a symptom of mitral stenosis, especially when associated with hæmoptysis; and though extremely suspicious under all circumstances, these symptoms may, I believe, be regarded as quite pathognomonic when accompanied by tolerably persistent reduplication of the second sound, particularly if associated with presystolic thrill, notwithstanding the absence of all murmur. The presence of pulmonic accentuation, though never absent in these circumstances, is really a phenomenon of comparatively slight importance in specializing the diagnosis, as it depends entirely upon pulmonic congestion, which may be the result of so many various lesions.

Apart, however, from any presystolic murmur or from any extreme irregularity of the pulse, mitral stenosis is occasionally accompanied solely by a systolic mitral murmur, and it is always a matter of interest, and sometimes of importance, to determine the exact nature of the lesion on which this murmur depends. The two following cases, besides the great individual interest which they possess, are of importance as showing the data upon which this diagnosis may be founded.

CASE 8.—Agnes Gunn, æt. 18, admitted into Ward XIII. on 27th October 1870, complaining of dyspnœa, cough, and spit. There is no history of rheumatism, but she had suffered from chorea about two years ago. About twelve months ago she was admitted with symptoms similar to the present into Ward XI. under Dr Laycock, and in the record of her case it is stated that there was then a mitral murmur succeeding and partially replacing the first sound, and that the tricuspid dulness was increased. At the date of admission under my care, her face was observed to be full, puffy, and rather livid, her expression dull and heavy, yet not free from anxiety. There was some swelling of the feet and legs, great dyspnœa, considerable hard cough, and copious watery expectoration. On passing the hand over the lower part of the sternum, the right side of the heart was fouud to beat with a slow heaving pulsation, the left apex being only faintly felt in its normal position between the fifth and sixth ribs, the impulse between the third and fourth interspaces on the left side being felt to be greater than normal. On percussion, the cardiac dulness was found to extend at one inch from the sternum from the upper border of the third rib down to the liver dulness; and on a level with the fourth rib, from one inch to the right of the sternum transversely across for a distance of six inches. On auscultation in the mitral area, the apex beat is found to be accompanied by a slight thump, followed by a bruit which replaces the first sound; the second sound is distinctly audible at the apex; this systolic murmur is lost as we pass to the left, and, about the middle of the infra-axillary space, is replaced by an impure first sound, which continues audible on auscultating round to the base of the scapula. Over the tricuspid area, a loud blowing murmur completely replaces the first sound. At the base, between the second and third ribs on the right side, an impure first sound is heard followed by a feeble second; between the second and third ribs on the left side, the first sound is also impure, and followed by a distinctly accentuated second sound. There is no venous pulsation in the neck, but the veins are somewhat small, empty, and obscured by the general turgidity. The pulse is 76, small, weak, and somewhat irregular; its character is graphically represented in the annexed diagram (fig. 2). She continued under treatment, mainly with digitalis and squill, till the 29th December, when she was discharged, relieved from her more urgent symptoms.

In this case the main elements relied on in proof of the existence of mitral stenosis were — 1*st*, The slight thump preceding the

Fig. 2.



systolic bruit, and constituting, as it were, an imperfect and abortive attempt at a first sound, a phenomenon which in my experience is never absent in such cases of mitral stenosis as have no presystolic murmur attending them, quite apart from the existence of any systolic murmur, and which very possibly is in some cases merely the tail of the rough auriculo-systolic murmur, which it phonetically exactly represents, but it is too sharp and short for my ear, at least, accurately to time; in other cases it undoubtedly is due to the imperfect closure of the mitral valve, as can be accurately enough ascertained by timing it by the carotid pulse, the thump in such cases being more prolonged. 2*d*, The fact that the soft systolic murmur was not distinctly propagated past the middle of the infra-axillary space. This is, according to my experience, an invariable accompaniment of mitral stenosis; not that the systolic murmur is altogether lost, but that the remnant of the first sound is so much more distinctly propagated, that it speedily becomes merely an impure first sound, in which the systolic blow is more or less distinctly to be recognised according to the amount of regurgitation present. In the pure regurgitant murmur this is never the case; the murmur may become fainter as we pass to the angle of the scapula, but it never assumes any of the elements of a first sound. These two phenomena are to me distinctive, and are never observed save when mitral obstruction is present. As corroborative phenomena, we had the early occurrence and rapid development of dilatation of the right side of the heart, proving the obstacle to the onward flow of the blood, an obstacle still further evinced by the diminished arterial pulse (*vide* upstroke in fig. 2), the weakened sound of the closure of the aortic valves, and the persistence of the pulmonic accentuation, notwithstanding considerable tricuspid regurgitation, as evinced by the loud systolic tricuspid murmur. This proof derived from the state of the right side is even more strong in cases in which there never has been any coexistent bronchitis, as is occasionally observed.[1] And even in this case, though there was evidently great pulmonary congestion and copious expectoration of watery fluid, yet the absence of rhonchi and the rarity of crepitation showed that this condition was much more allied to the general turgescent œdema of the body than to true bronchitis; that it was, in fact, more an œdema of the lung than a true catarrhal condition, and therefore all the more valuable a proof of obstructed circulation.

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[1] Especially in Ellen Harkins, admitted into Ward XIII. on 20th April, and discharged improved on 17th June 1871. In her we had all the percussion signs of tricuspid dilatation with distinct jugular pulsation, but no tricuspid bruit, and an entire absence of any history of bronchitis.

On 27th March 1871, Agnes Gunn was readmitted for an exacerbation of all her symptoms, induced about a month previously by going on a cold day from the wash-tub to an outside well while scantily clothed. Her cough, shortness of breath, watery expectoration, and cardiac distress were much increased; the jugular veins, though still small, were now seen to pulsate distinctly synchronously with the heart, and her face, neck, and limbs, but especially her lower ones, were very œdematous. The condition of her cardiac organ was much as formerly, with this exception, that now the apex beat was very distinctly to be felt, and the result of this was that the impulse at the lower part of the sternum was apparently lessened. This was explained to be probably due to increased hypertrophy and dilatation of the right ventricle, which had pushed the left wholly backwards, the right apex being now the only one to be felt. It is obvious that this was the only explanation admissible in the face of an increasing cardiac affection, now fast becoming serious, and so largely implicating the right heart from the first, it was impossible to conclude that a left ventricle, defectively nourished and unable to hold its own from the first, could recover itself and again re-assert its position apart from any well-marked evidence of improvement in the onward circulation, which was entirely absent, while the view taken was perfectly consistent with the ordinary progress of such cases, though the change effected is only rarely observed in such an extreme degree. Gunn remained in the ward till her death, on the morning of 12th July. During this period she had an attack of hemi-chorea, the sufferings induced by it being rapidly subdued by hydrate of chloral and full doses of arsenic; but it persisted for many weeks as a slight twitching of the thumb and forefinger of the right hand, finally disappearing, however, many weeks before death. This choreic attack, however, rapidly broke down her cardiac power, and she never rallied, dying under symptoms of pulmonary apoplexy, with gradually increasing cardiac asthenia. The autopsy was made on 13th July, thirty hours after death. Her body was moderately fat, her legs very œdematous, her face and lips livid. On opening the thorax, the pericardium was found to be distended by from 15 to 20 ounces of very slightly turbid serum. The heart was considerably enlarged, weighing 16½ oz.; the right ventricle concealed the left, and formed the apex of the heart; it was much dilated and its walls hypertrophied, measuring half an inch in thickness; the tricuspid valve was slightly dilated, admitting five fingers easily; on its right cusp, near the free margin, there was a small vegetation about the size of a millet seed, soft and elastic; the right auricle was greatly dilated, not hypertrophied; the aortic valves were competent; the left ventricle slightly hypertrophied, not dilated; the opening of the mitral valve was so extremely contracted as only to permit the point of the little finger; it was very much thickened, and its cusps glued together by their margins; on the auricular surface of each cusp there was a row of small vegetations like millet seeds; the left auricle was slightly dilated, and its walls much hypertrophied, being about twice their natural thickness. The left lung contained two large and recent hæmorrhagic clots, presenting on section a dark venous surface; one of these was situate along the anterior margin of the superior lobe, extending from the apex downwards for a distance of four inches, while it measured transversely one inch and a half; the other was situate in the inferior lobe, near its anterior margin, and was about the size of a large orange; its circumference was pretty sharply defined. The right lung contained no recent extravasations, but in the inferior lobe, immediately beneath the middle of its external surface, there was a yellowish-gray patch of a wedge shape, with its base to the pleura, evidently the remains of an old hæmorrhage; over the surface of this lung, and especially at its anterior margins, there were some emphysematous patches. The liver weighed 4 lbs. 2 oz., was much congested, and slightly cirrhotic, the lobules being very distinctly differentiated by the interlobular cellular tissue. The spleen weighed 5 oz., was of firm texture, and contained two hæmorrhagic infarcti, each about the size of a walnut, tough in texture, and of a bright yellow colour. The kidneys were healthy, and weighed each 5½ oz. The dissection in this case, therefore, completely confirmed the diagnosis during life, while the marked hypertrophy of the left auricle, in contradistinction to the simply dilated condition of the right auricle, in spite of the great preponderance of regurgitation on the right side, seems an evident physiological proof of the influence of obstruction in originating the disease—a proof which, I may add, is never wanting in any case of mitral stenosis, though, as a further evidence of its importance, it is always found to vary in degree according to the amount of obstruction present.

The next case which I shall quote is also very instructive as to the signs of stenosis where only the murmur of regurgitation is present. CASE 9.—Alex. Milne, a printer, aged 17, admitted into Ward V. on 28th November 1870, complaining of palpitation, cough, shortness of breath, and pain in the cardiac region. His history was, that similar cardiac symptoms had troubled him from the age of six, and that to these a cough had been superadded about a year ago; since this time the pain in the cardiac region had been much worse; the patient was pale and anæmic-looking, he has never had rheumatism, his family history was unimportant. On inspection, greater pulsation than natural was visible over the cardiac region, especially at its lower part; the apex beat was distinct between the fifth and sixth ribs, 2⅝ inches from the left edge of the sternum; on percussing downwards one inch from the left edge of the sternum, cardiac dulness was found to commence at the upper edge of the third rib, and extended down to the liver dulness; on a level with the fourth rib the transverse dulness did not commence till the left edge of the sternum, but extended to the left for a distance of fully three inches; on auscultating over the mitral area, the first portion of a first sound was heard, followed by a loud systolic bruit, and closed by an imperfectly-heard second sound; this systolic murmur is propagated to the right, and is heard distinctly over every part of the right ventricle, followed by a reduplicated second sound, but is not so distinctly propagated to the left, becoming very faint after passing the centre of the infra-axillary space; over the right ventricle a slight but distinct heaving is conveyed to the ear by the stethoscope; between the second and third ribs, on the left side, distinct accentuation of the pulmonary portion of the second sound is audible, the second sound being here reduplicate, as it is also heard to be between the second and third ribs on the right side, where the aortic portion is heard tolerably natural. Over the jugular veins a hæmic murmur is audible, but no pulsation is visible. The pulmonary physical signs were normal, and the cough left him entirely after a short residence in the Infirmary. His digestive system is normal, except that he has little appetite for food. The urine is, however, smoky, contains numerous blood-corpuscles, a few small granular casts, and one-sixth of albumen.

The peculiar character of the first sound, the mode in which the systolic murmur was propagated, and the persistent reduplication of the second sound, gave me reason to state that in this case also we had to do with mitral constriction; while the tricuspid bruit and evident dilatation, with hypertrophy of the right side, gave a seriousness to the prognosis, which was not lessened by the persistent hæmaturia and the anæmic condition of the patient.

Under treatment his cough speedily ceased, his cardiac symptoms moderated, the pain ceasing, and even his kidney symptoms were modified, the tube-casts being no longer to be found, and the hæmaturia lessened, while his general health was much improved. He was sent to the Convalescent Hospital on 23d February. After being some time at home Milne became gradually worse, weaker, and more distressed by his cardiac symptoms, and he was in this state readmitted into Ward V. on 6th April 1871. His cardiac symptoms were unaltered, but his debility was greatly increased. His hæmaturia continued, and there was a good deal of general œdema. He was very shortly afterwards confined to bed, suffering much from orthopnœa; and after lingering on in this state he died exhausted on the 24th of May, having spitten a good deal of blood during the last few days of his life. At the autopsy there was found great general œdema of the body; the face, which had been livid before death, had become of a roseate hue; a quantity of froth exuded from the mouth; over both lungs there were numerous pleuritic adhesions; the left lung was congested and œdematous; the inferior lobe of the right lung was hepatized, the middle lobe partially consolidated, and the base of the upper lobe also partially consolidated and wholly œdematous. The heart weighed 22 oz. The pericardium was universally adherent—the adhesions tough and fibrous; the right side was dilated and filled with dark clot, the tricuspid opening admitting 5½ fingers; the left side was excentrically hypertrophied and filled with a tough and partially decolorized clot; the mitral opening was constricted, admitting only one finger and a half, its cusps adherent and greatly thickened; the aortic valves were competent. The nutmeg liver weighed 3 lbs. 9 oz., the spleen weighed 12 oz., the kidneys weighed each 6½ oz.; they were enlarged, the capsules non-adherent, the surface a marbled-gray, studded with stellate vessels and hæmorrhagic spots, cortical portion speckled with yellowish opacities.

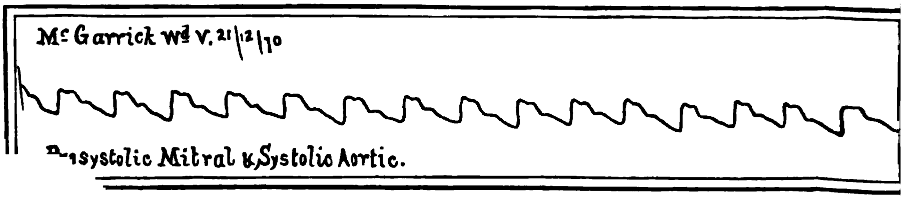
These cases, which might be largely increased in number, are sufficient to show the signs upon which I rely for the diagnosis of mitral stenosis where no murmur, or where only a murmur of regurgitation, is to be heard; they are, I believe, perfectly reliable, and are of importance, not only in regard to accuracy of diagnosis, but also for the prognosis, and still more for the treatment, of the case.

It will have been observed from the cases narrated, that a simple stenotic condition of the mitral valve leaves the left ventricle comparatively unaffected; but inasmuch as this is a rather rare state of matters, the left ventricle is usually found to be secondarily somewhat hypertrophied, this condition being due to the obstruction caused by hepatic cirrhosis as in Case 8, by disease of the kidneys as in Case 2, or by adherent pericardium as in Case 9, or by some obstruction in the aorta, as in the following case.

Case 10.—James M'Carrick, a brassfounder, æt. 18, first admitted into Ward V. on 25th October 1869, complaining of shortness of breath, palpitation, and hæmoptysis. Patient states that about a month ago, while wheeling a barrow up a hill, he lost his breath, was suddenly seized with a cough, and spat up some blood. The cough improved under treatment, but was always accompanied by expectoration of blood, and his dyspnœa on going up hill continued. Previous to this attack he had always been well, except that he has had measles, scarlatina, and enteric fever; he has never had rheumatism. His family history is good. He is short and slightly built, but his expression is natural, as is also his external conformation. His pulse is 86, and somewhat jerking. Heart's apex beats somewhat forcibly a little inside of the nipple line between the fifth and sixth ribs; on placing the hand over the precardial region a rough purring thrill is felt to precede and run up to the apex beat. One inch from the sternum the cardiac dulness commences at the upper edge of the third rib, and runs down to the liver dulness, and in the line of the fourth rib it extends from the left edge of the sternum to near the nipple for a distance of three inches. On auscultation over the mitral area a loud purring murmur is heard passing into a soft blowing one; the rough portion of this murmur, tested by the carotid pulse, is auriculo-systolic in time, the soft-blowing portion ventriculo-systolic, and replaces the first sound, the two being separated by the impulse of the apex; a loud diastolic murmur is also heard, which becomes more distinct as you pass the stethoscope towards the base, where it is heard to follow the second sound, which is so faint that it almost seems to be obscure. In the aortic area there is a loud systolic bruit propagated into the arteries of the neck. The second sound is audible but somewhat weakened. In the pulmonic area the second sound is accentuated. A few bubbling râles were heard here and there over the lungs, otherwise his condition was normal, except that he had some *jactitatio e somno*. By 5th November his hæmoptysis had ceased, and he gradually improved till 7th December, when he was discharged.

On 16th December 1870 he was readmitted on account of increased cough, dyspnœa, and palpitation; no hæmoptysis. Since his discharge he has been constantly working, though obliged to be careful, and occasionally laid aside by dyspnœa for a day or two, but never for longer than a week at a time. On inspection a heaving impulse is seen and felt between the fifth and sixth ribs in a line with the nipple. This impulse is strictly localized, occupies a space two inches in width, and elevates the chest walls a full quarter of an inch; a purring tremor is felt over this region preceding the impulse. One inch from the sternum the cardiac dulness extends from the upper border of the third rib to liver dulness, and extends transversely from about one inch to the right of the sternum for a distance of five inches. On auscultation over the mitral area a loud purring murmur, auriculo-systolic in time, is heard running up to the apex beat, and followed by an impure first sound, no systolic murmur being now audible. In the aortic area a loud systolic murmur is audible, which is propagated into the arteries of the neck; the closure of the aortic valves is distinctly heard, but somewhat more feebly than usual, and followed by a faint diastolic murmur feebly audible over all the cardiac area, but most distinctly heard just where the fourth rib joins the sternum on the left side. In the pulmonic area, the systolic murmur is heard (propagated) followed by an accentuated second sound, and that by the faint diastolic murmur already described. The pulse is 84, small, soft, and without jerk, neither does it become jerky on elevating the arm; it is graphically represented as follows:—

Fig. 3.



He had some cough when admitted, but was otherwise normal. Treatment again restored him to a state of comparative health, but not so perfectly as formerly, as during the past year he has repeatedly called for advice, and is now again in Ward V., having been readmitted on 25th November 1871. He does not seem to have grown any since he first came under treatment; he looks pale and thin, and complains much of debility; his cardiac phenomena are unchanged, except that the diastolic murmur is much more feeble and more distinctly localized to the spot indicated by the junction of the fourth rib on the left side with the sternum. This case is especially instructive in three respects—*1st*, It shows the influence of obstruction in developing hypertrophy behind it as exhibited in the greatly increased force and extent of the apex beat, distinctly that of the left ventricle as shown by the absence of any increased influence of the lower part of the sternum or of any systolic bruit developed there; *2d*, It shows the influence of persistent mitral stenosis in developing dilatations of the right ventricle, evinced by the increased breadth of dulness; and, *3d*, It shows in a very marked manner the non-importance of mere murmurs as signs of organic disease in comparison with the other physical signs. Here we had a loud systolic apex murmur which has completely disappeared, the physical cause of this unquestionably persisting, as revealed by the permanence of the presystolic murmur; but we had also a diastolic murmur so loud and extensive in its propagations as to simulate so fully aortic regurgitation that in the earliest report of the case it is referred "probably" to this cause,—the jerking nature of the pulse, due to pulmonary hæmorrhage, contributing an important quota to this "probably;" yet now it is restricted to a limited area directly over the mitral valve, and from the distinctly audible closure of both sets of sigmoid valves, the absence of every other sign of aortic regurgitation from the pulse (there being neither distinct delay nor jerking), or from the heart (dilatation of left ventricle in excess of hypertrophy), and its common occurrence as a mere symptom of mitral stenosis, as already described (p. 442, etc., *antea*), it is most probably to be referred to the latter cause alone. It might, indeed, depend on a mere opening—ruptured aneurism or other lesion—in the aortic valves; but in that case the increased hypertrophy of the left ventricle would rather have intensified than lessened the murmur, especially if we consider the comparative invariability of aortic regurgitant murmurs,[1] while the variablity of mitral murmurs, as evinced in this as well as in other cases, coupled with the persistent absence of other physical signs of aortic regurgitation, is a very strong argument in favour of its purely mitral origin.

Cases of mitral stenosis are of such frequent occurrence that I could readily multiply these narratives; I have selected a few only, the history of which seems to me to bear importantly upon the diagnosis, and I have only in so far selected them as they happened to present themselves to my memory, for I possess many records of at least as much importance as those narrated. The next case I shall relate has a bearing on the prognosis respecting which sufficient data are still wanting.

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[1] *Vide* Dr Sanders on the Variations of Organic Cardiac Murmurs, *Ed Med. Jour.*, January 1868, p. 566.

CASE 11.—Andrew Ormiston, a miner, aged 18, admitted into Ward V., on 1st November 1869, complaining of shortness of breath, and pain in the cardiac region. Patient states that he has been ailing for about a year, but before that was always in good health, with the exception of having had chickenpox and scarlatina in childhood—in particular, has never suffered from rheumatism. He has been in hospital once during the past year for similar complaints. He is troubled with shortness of breath, aggravated by exertion or coughing; his expectoration is grayish, but sometimes bloody. He has occasional paroxysms of pain in the epigastrium, coming on about half-an-hour after taking food. He is small for his years, but of a ruddy countenance and fresh healthy appearance. He is pigeon-breasted, the chest being flattened laterally; on palpation a thrill is felt over the heart's apex preceding its impulse. Cardiac dulness extends from the upper edge of the third rib to the liver dulness, and transversely along the upper border of the fourth rib from the right edge of the sternum to the nipple, a distance of 4½ inches. On auscultating over the mitral area a well-marked rough bruit is heard preceding and running up to the first sound; the pulmonary second sound is accentuated, the aortic somewhat weakened. The accentuation of the pulmonary sound is markedly increased whenever he happens to have a cough, and also after exertion. Pulse 88, soft, and only slightly irregular. Respiratory system normal. Tongue clean, appetite variable, bowels regular, urine normal. During his residence in hospital his general symptoms varied according as he suffered from catarrhal complication or not, or from temporary dyspepsia. He was sent improved to the Convalescent Hospital on 15th December. He was recommended to give up mining, and if possible to procure some easy indoor occupation. For some time he took charge of a library; latterly he has been assisting in a grocer's shop. I have seen him frequently since his discharge, and once quite recently. He has grown considerably, and is now a well-grown, healthy-looking lad of his years, though quite unfit for the ordinary exertion of manual labour, his sufferings being always increased by any unusual exertion. The peculiarity and importance of this case is, that he is a contemporary of Cases 9 and 10, that he presents similar symptoms *quoad* the mitral valve itself, but has no complication cardiac or otherwise, that he has been enabled to take considerable care of himself, and that the result is, that he is still alive, and presents none but local symptoms of the cardiac disease under which he labours, showing that under even tolerably favourable circumstances uncomplicated mitral stenosis is not incompatible with life and a moderate share of health; but this, which might be shown by the record of many similar living cases, is perhaps best proved, *quoad* life at least, by the comparative infrequency of mitral stenosis as a cause of death in the pathological theatre, compared with its frequency as a symptom of disease in the wards—a fact borne out by your own daily experience, coupled with that of the Pathologist of our Infirmary.

You will remember, then, that mitral stenosis is to be recognised by the existence of a rough murmur preceding and running up to the apex beat and the carotid pulse, which is pathognomonic of this lesion; that this murmur may, and often does, commence as a soft, blowing, and sometimes musical diastolic murmur following the second sound, becoming rougher towards its conclusion, audible sometimes over the whole cardiac area, more usually, *quoad* its diastolic portion, just over the mitral valve where the fourth rib on the left joins the sternum; that any portion of this prolonged murmur may be absent, and that it may either be continuous or broken by a pause equivalent as to rhythm, though not as to duration, to the normal pause of the heart's action, the length of the pause being dependent on the amount of stenosis present, *i.e.*, the shorter the pause the greater the stenosis; that to be distinctive of mitral lesion a diastolic murmur must be unaccompanied by any signs of aortic regurgitation, must have a clear second sound preceding it, and be accompanied by no jerking thrill of the pulse increased or produced by elevation of the arm, and no dilatation of the left ventricle evinced by depression of the apex beat; the distinctive signs of pulmonary regurgitation are unknown, but the affection is so extremely rare that it may be practically excluded. That extreme irregularity of the pulse associated with pyrexia is indicative of the possible existence of mitral stenosis, and this is corroborated by the existence of a thump preceding or accompanying the apex beat, by hæmoptysis, signs of enlargement of the right side of the heart, and accentuation of the pulmonary second sound. That a simple systolic apex bruit to be indicative of stenosis of the mitral valve must be accompanied or preceded by a more or less evident thump, the bruit ceasing at or about the middle of the infra-axillary space; being there replaced by a more or less impure first sound, the diagnosis of stenosis in such cases being confirmed by great irregularity of the pulse, and by great accentuation of the pulmonary second sound, and especially if accompanied by evidence of tricuspid regurgitation, and the other signs and symptoms of dilatation of the right heart.

Persistent reduplication of the second sound, though in itself comparatively unimportant, is always to be regarded as strong confirmatory proof of mitral stenosis when it accompanies any of the phenomena just described.

The etiology of mitral stenosis is as yet wholly unknown. This much alone is certain, that in the vast majority of cases it is wholly unaccompanied by any preceding history of rheumatism.

The prognosis is equally uncertain. Simple, uncomplicated, mitral stenosis is not a disease of itself very fatal to longevity. Judg ing from my own experience, I should say that a deduction of one-third from the mean future expectancy of life is quite within the mark, and more likely to be exceeded than the reverse. Any cardiac complication, however, will materially reduce this expectancy, while intercurrent, though apparently irrelevant, complications are also of course liable to produce a similar effect. Comparing it therefore with other cardiac diseases, my own experience would lead me to place it in regard to life expectancy as second in the roll—aortic obstruction, mitral obstruction, aortic regurgitation. In purely hospital practice, aortic regurgitation is by far the most fatal of cardiac valvular diseases. So far as expectancy of life is concerned in this disease, however, the experience of private practice is required to correct that obtained in hospitals; and mitral regurgitation being the order of fatality in which such diseases ordinarily follow each other in a pathological register, consecutive disease of the right side of the heart being the true test of expectancy of death in all except aortic regurgitation, in which, as I shall by-and-by show, certain causes exist which lessen the value of the symptoms of this affection, or rather render their absence of less importance in prognosis.

The treatment of this disease I shall reserve till I come to speak of the treatment of valvular heart affections generally.

ARTICLE VI.—*On the Treatment of Club-Foot.* By THOMAS ANNANDALE,, F.R.S.E., Surgeon to the Royal Infirmary, and Lecturer on Clinical Surgery.

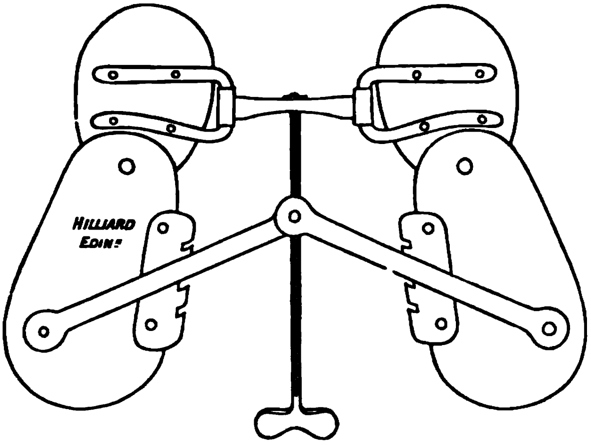
FURTHER experience in the treatment of club-foot has led me to modify and improve the apparatus described and figured in the Journal for February 1869. The two principal obstacles encountered in the treatment of talipes varus by means of a simple apparatus not carried above the knee are—1*st*, The difficulty of retaining the appliance in position, owing to the constant movements of the parts and restlessness of the patient. 2*d*, The difficulty of acting effectually upon the inversion of the anterior portion of the foot, and, at the same time, preventing the rotation inwards of the whole leg.

Finding that my former apparatus was not thoroughly efficient in overcoming these difficulties, I have endeavoured, during the last two years, to perfect it, and have, by means of the improved appliance, obtained the best possible results.

The adaptation to the sole-plate of a soft leather boot, lacing in front, was the first improvement to my former apparatus in regard to the better fixing of the foot; but as even this was not completely efficient, I took advantage of a suggestion which has been formerly made (not by myself), that the two feet should, in some way, be secured together. This latter addition has proved most valuable, not only in restraining the movements of the parts, and so preventing the displacement of the apparatus, but also in furnishing a powerful and successful means of acting upon the inversion of the foot and rotation of the leg, and I now use it in all cases of single and double talipes varus.

In fig. 1 is illustrated the under surface of the sole-plate, showing the method of connecting the double apparatus, and the screw by means of which the anterior portion of the sole-plate, connected to the posterior by a movable joint, can be gradually inverted or everted according to the direction in which the handle of the screw is turned.

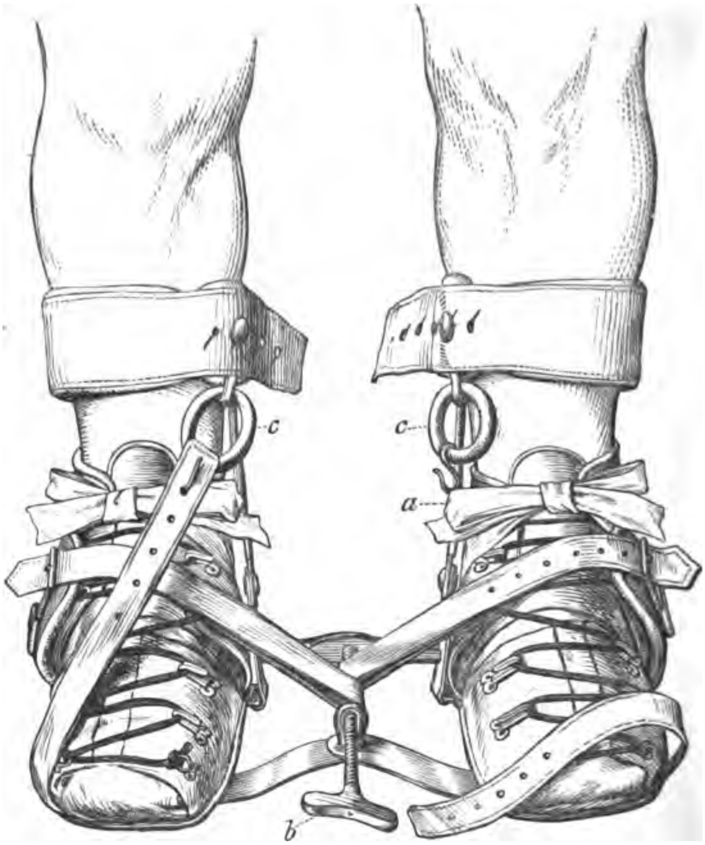
Fig. 1.



In fig. 2 the apparatus is shown applied to the feet. When the feet have been secured to the sole-plate by means of the laced boot, and a special padded strap for securing the heel adjusted (the ends of this strap, which crosses over the dorsum of the foot, are carried round the back of the heel through a ring in the sole-plate, and then brought again in front and tied together, as seen at *a*), a second padded strap, placed over the outer aspect of the posterior portion of the foot is applied; and then, by turning the handle of the screw (*b*), the deformity of the foot can be steadily and progressively acted upon. At *c* is a strong indian-rubber ring, to which a strap attached to the anterior portion of the sole-plate is connected, so as to act by drawing up the foot, and overcoming the contraction of the tendo Achillis.

With the assistance of this apparatus I have already treated, most successfully, several cases of talipes varus in the infant, and also three very aggravated examples of the same deformity in older patients. In all the cases, I have found it necessary first to divide the tendo Achillis, but have not required to interfere with the tendons of the tibialis anticus and posticus muscles, as the contraction of these muscles has been gradually overcome by means of the screw.

Fig 2.

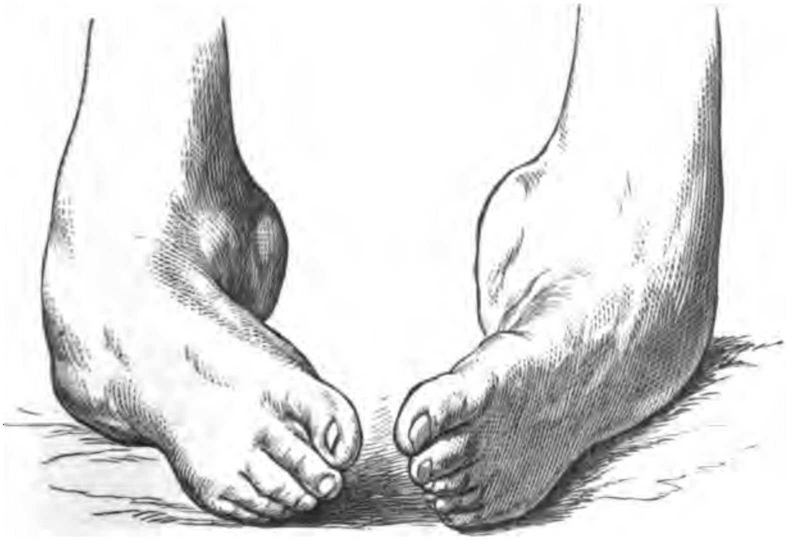


From the results obtained in these cases, I feel sure that it will rarely be necessary to divide the tibial tendons in treating cases of talipes varus in the manner recommended, but the division of the tendo Achillis has been a very essential aid in the cure of the deformity in all the cases. In some of the cases, too, the division of the plantar fascia, or portions of it, has been an assistance in the treatment.

I still advise that the treatment of this deformity should not be commenced before the second or third months of life. From six weeks to three months, according to the severity of the distortion, is the time I have found it necessary to employ the apparatus. As soon as the deformity has been in this way relieved, and the patient is of an age when walking ought to be practised, an ordinary strong boot, with some simple side support, should be worn until the foot has become strengthened in its proper position. The apparatus should be regularly removed during its use, and the foot and leg rubbed and washed, and the various joints exercised with the hand.

Fig. 3 is from the casts of the feet of one of the aggravated cases lately treated with this apparatus. The patient was a girl, æt. 9 years, who had been twice operated upon before she came under my care, but without any satisfactory result. Both feet were well-marked examples of the deformity caused by neglected talipes varus.

Fig. 3.



After division of the tendo Achillis and portions of the plantar fascia in both feet, the apparatus was applied when the wounds were healed, and diligently employed for a little more than three months. At the end of this time the deformity in both feet was found to be cured, and the patient was able to place the soles of the feet properly on the ground and walk with them so.

Fig. 4.

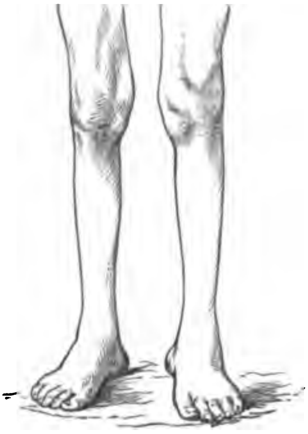


Fig. 4 is from a photograph of this patient's legs and feet, taken on the completion of the cure.

Part Second.

REVIEWS.

Anæsthesia, Hospitalism, Hermaphroditism, and a Proposal to Stamp out Smallpox and other Contagious Diseases. By Sir JAMES Y. SIMPSON, Bart., etc. Edited by Sir W. G. SIMPSON, Bart., etc. Edinburgh: Adam and Charles Black: 1871.

SIR WALTER GRINDLAY SIMPSON has had an easy task to perform, and he has done it well. To collect and arrange his father's already printed papers was a pleasant exercise of the piety of the son. He has evidently been constrained, by the smallness of the mass of Anæsthesia and Hospital papers, to swell out the volume by the very elaborate memoir on Hermaphroditism, which first appeared in the *Cyclopædia of Anatomy and Physiology*. The whole form a good large volume, the second of the three destined to form the chief, and a highly creditable memorial of the diligence, energy, and talents of the deceased baronet.

When the Anæsthesia papers first appeared in a collected form in this country thirteen years ago, we described them as having, on the wings of fame, carried the name of Dr Simpson to every quarter of the globe, and to the bosoms of myriads of the afflicted. The harvest of fame and of money which Sir James Simpson reaped was truly enormous, and enough to overwhelm most people. But while no one has sought to detract from his great merits in connexion with anæsthesia, there has been, and there continues to be, a good deal of discussion as to his place among the list of the modern successful and original practitioners of this art—Wells, Morton, Jackson, Waldie, Simpson, Flourens, and others.

When the practice of anæsthesia was begun in America by Wells, who employed nitrous oxide, nothing was heard of it here. But when its successful and general use was commenced under the auspices of Morton and Jackson, who employed sulphuric ether, it was soon caught up by Liston in London, and the practice spread abroad with electric speed. Its application in midwifery was a matter of course; and Dubois in Paris, and Simpson in Edinburgh, immediately set about it almost simultaneously. But the early bird gets the early worm, and Simpson took the lead, publishing at once his paper on the Employment of Sulphuric Ether to allay the Pains of Parturition. He got it translated into French, and quickly published in the *Union Medicale*.

The agent was an ether. Might there not be other agents equally or more potent and useful? Already many chemists, physiologists, physicians, and surgeons were on the alert, trying a variety of chemicals which could be respired. Who should first pounce upon chloroform? Several were looking at it, had it indeed in their hands, and were trying it. But again comes in the proverb about the early bird, and Simpson sprang into print before them all, reaping the reward of his diligence and energy, and connecting his name inseparably as a discoverer with the introduction of the new anæsthetic agent. The agent at once became popular, and Simpson's name has naturally always gone with it. Other discoverers of it were not so quicksighted and rapid in their movements as he was, and he outstripped them. Simpson's claim to priority of discovery of chloroform has been contested; and we have no inclination at present to enter on this point. It is quite possible that further evidence may yet be produced regarding it, as many of Simpson's contemporaries and collaborators still live who have published no documents or statements.

Simpson's method of proceeding towards the discovery of the new anæsthetic agent was extremely simple. His knowledge of chemistry was very slender, and could not guide him to the lines of chemical series. He simply set about, without any scientific aid or advantages, to try everything that was respirable, or that, if swallowed, could stupefy. He ranged through the chemicals of Professor Gregory's and of George Wilson's shelves, and of Duncan, Flockhart, and Co.'s shop, and tried everything, from the most volatile ether to coal-gas and the smoke of the puff-ball. In fact, he proceeded as one does who searches for hidden treasure, or as a slave seeks a diamond in the mines of Golconda; and he found it at last. No slaves ever worked harder than he and his assistants did at this time; and it is doubtful whether any of them emerged from the trial with uninjured constitutions. Chloroform was found so much more convenient than ether, that it rapidly supplanted the latter over the greater part of Europe. In America it has never been so generally used as elsewhere, many surgeons and hospitals adhering to the older anæsthetic agent, and preferring it. Indeed, lately, even in this country, ether has found numerous advocates who maintain that its use is less dangerous than the use of chloroform. It is highly probable that this is so; but evidence of sufficient exactness and cogency has not yet been adduced. The settlement of the question is very desirable, and will go far to fix the position of the one agent and of the other in professional esteem.

Ether and its marvellous powers had scarcely had time to take possession of the public mind of this country, when chloroform and Simpson were divulged. The public made no distinction between chloroform and anæsthesia, and thus confusion and injustice arose, Simpson getting the credit not only of chloroform, but of anæsthesia also. Especially was jealousy of this excited in America, which country had undoubted claims to the great discovery of artificial anæsthesia; and this jealousy was not removed, as it might have been, by any writing of Simpson's. On the contrary, it was intensified by his writings, and especially by some words in the article on Chloroform, which he prepared for the last edition of the *Encyclopædia Brittanica.* It was upon these that Dr Bigelow laid stress in his pamphlet on this subject, and with justice.

Simpson identified himself with anæsthesia. His true position, with respect to it, is not as discoverer of it in any respect whatever, but as promulgator, advocate, or apostle. His usual enthusiasm never was so intensified as in his devotion to this great cause, and there should be no jealousy of the great fame he acquired in consequence. It was simply the recognition by the public of the immense and otherwise unrewarded toils that he undertook in a great public cause. It got him his baronetcy. He and a few of his friends were fain to believe that acupressure formed one of his claims to the title. Perhaps it was so at the time. It is not so now, for acupressure is nearly forgotten.

In his anæsthetic apostleship, Simpson's combativeness was strongly exemplified. The student will find much evidence of it in the volume before us, but more in the journals of the period. A death in Newcastle from chloroform was published: he immediately set about explaining it away, printed the explanation, and, at great trouble and expense, sent it, as he sent all his other pamphlets, in bushels, through the post, to his professional and nonprofessional friends and acquaintances. A notable example of his ways is to be found in his very clever answer to the religious objections to the use of chloroform in midwifery. The fact is, there was no religious objection made that was worthy of the name or of the slightest attention. No good was to come, rather the contrary, from paying any attention to the small, scarcely audible cackle of some geese. But Simpson delighted to assume the pugilistic attitudes, and to fight a bogie if he could not get an opponent worthy of his prowess. He knew absolutely nothing of Hebrew—not even the alphabet—and nearly as little of Biblical criticism; yet he set about button-holing his learned friends, and managed to put together the clever skit to which we have alluded. This pamphlet appears as a chapter in the volume before us. We rather regret this, for there is no note to indicate that it was a mere literary skit. As such it was passable; but literary morality does not approve of a solemn, learned, and critical chapter, in a work intended for future generations, on a subject of which the author was as ignorant as possible. In being so ignorant there was neither dishonour nor disgrace, and the statement of the fact would have tended to increase the estimate of Simpson's great literary cleverness, while it would have avoided the blot.

Of Simpson's papers on Hospitalism we find it difficult to speak. He brought an awful charge against the hospitals of his native country, and he should have been ready with crushing arguments to justify it. These were not forthcoming. In their stead, we have rambling, confused, and confusing chapter on chapter. But

Simpson, though young in years, was decidedly getting old. In his earlier days he brought antiquarian lore, vigour of thought, originality, precision of language into play, and made the best of whatever cause he took in hand. Here he did not appear to advantage. His pen fell prematurely from his hand, and he left the great question of Hospitalism to be settled by a new race of medical inquirers.

The Science and Practice of Surgery. Illustrated by 470 Wood Engravings. By FREDERICK JAMES GANT, F.R.C.S., Surgeon to the Royal Free Hospital, etc. London: J. & A. Churchill: 1871. Pp. 1266.

AN attempt to give an account, be it ever so short and compressed, of the science and art of surgery in one volume is one of considerable boldness, and for its successful performance demands very peculiar natural talents, improved by natural training, and chastened and sharpened by long practice in the art of communicating knowledge.

The incisive brevity of style and the vast experience of the late Mr Syme, rendered his book a wonderful epitome, full of wisdom, and yet easy to read; still he ventured no further than to call it the Principles of Surgery. Mr Holmes's System of Surgery is now contained in five large volumes, and includes the labours of many practised teachers. Gross, Erichsen, Miller, and Pirie have in their systematic works given the cream and sifted grains of many courses of lectures on surgery; the redundancies, deficiencies, and errors of each have, at least, been tried in the furnace of the lecture-room and the ward. Sir W. Fergusson confines himself to Practical Surgery. Mr Spence's long experience both in teaching and hospital only emboldens him so far as to call his *magnum opus* by the modest title of Lectures on Surgery.

When a surgeon who is not as yet known as a teacher offers to the profession a "new and systematic work representing the Science and Practice of Surgery," he not only shows boldness and self-reliance, but challenges an honest criticism on the success of his attempt.

In his preface the author claims some special merits of very great importance. 1. "General Pathology and Surgery, comprising the forms of disease which are common to all parts of the body, *is* (sic) made more comprehensive than in other systematic works." Our dictionary tells us that comprehensive means "including much within narrow limits." This, then, will be a most rare and valuable characteristic, if present. 2. "That by constantly having regard to the selection of essential matter, and pursuing a uniform arrangement, I have simplified and not inconsiderably abridged the size of the work." Also very good.

In the preface the author acknowledges his indebtedness to previous workers, more especially to Mr Holmes's System, and some recently-published standard treatises. We agree with him, that he is *very* much indebted to these works.

The limits of our pages prevent anything like an analysis of such a work as this being given, nor would it be instructive; we would rather try to see how far Mr Gant has succeeded in his high aim, and fulfilled the promises of his preface; and if we have to criticise, even with keenness, we must not forget the extent and the difficulties of the task to which he set himself. 1. Is Mr Gant's General Pathology comprehensive? The introduction consists of a sort of farrago of words, at some points almost degenerating into twaddle, vague, long-winded, inaccurate, and ungrammatical. We use these, apparently harsh, expressions advisedly, and have marked many instances of each. What does the following sentence mean? "In March 1864, I brought prominently forward in my 'Principles of Surgery,' the Guidance of Pathology in Surgical Operations, as a General Principle; positively true in the great majority of operations, where the seats of operation and of disease or injury are identical; negatively true in other operations, where the object is to operate clear of the disease and amid healthy tissues."—Pp. 5, 6. Can human patience bear, in "a comprehensive General Pathology," to be met by time-honoured quotations from John Bell, p. 8; rich crusted anecdotes of Sir Astley Cooper, p. 8; Macartney's views as to contraction of arteries, p. 25; and on the modelling process, pp. 24–28; the last quoted entire?

Inaccurate accounts of Professor Lister's experiments—of Mr Simon's views in 1860—not an allusion, so far as we can discover, to the experiments of Cohnheim, Recklinghausen, or Burdon-Sanderson, on leucocytes—a confused jumble of the opinions of authors, from Travers and Macartney to B. W. Richardson—with long quotations, some even poetical,—lead us to fear that if this is comprehensive in including much within narrow limits, the included material is neither very valuable nor well arranged. Such a view of general pathology could never have been delivered to a class of students without its being at once discovered to be an unintelligible jumble.

We would wish to justify our word "ungrammatical," but will give but one instance, feeling sure that by a little care in the second edition, many of the grammatical inaccuracies which (doubtless *per incuriam*) deform the first will be corrected. "Nitrate of silver, lunar caustic, promotes the resolution of a whitlow, a bunion, a hordeum or stye in the margin of the eyelid; and such like intractable conditions of inflammation."—P. 64.

In many places we have noted old and exploded methods of treatment; some which are almost dangerous may be mentioned. Thus, in the treatment of fractures of the condyles of the humerus with displacement, Mr Gant recommends angular splints to command forearm and arm, and at the end of a month passive motion of the joint; if passive motion be postponed for a month, in many cases it will be too late to prevent stiffness.

In describing Potts's fracture of the fibula, no allusion is made to the risk, in some cases, of displacement of the heel backwards, nor any directions given for treating this displacement.

In the chapter on Diseases of the Eye, we have the old operation of couching described and figured—while Graefe's operation for extraction is not alluded to, nor is iridectomy described.

In describing the performance of thoracentesis, Bowditch's trocar is not even alluded to.

The arrangement of the work is confused, and much valuable space is taken up most unnecessarily by cases which, however interesting in themselves, are out of place in a system of surgery aiming at being comprehensive.

Then, as to diagrams: we are told, on the title-page, that the work contains 470 wood-engravings. So it does; but nearly the whole of them are "old familiar faces." The liberal publishers having put at the author's disposal their collection of wood-blocks, those already used by Cooper, Liston, Fergusson, and Bigg, now adorn Mr Gant's pages. We happen to be rather familiar with the illustrations of surgical works, both at first hand, in this country, and also after they have been pirated or conveyed by our American friends; so in the 470 we search almost in vain for a new face. Fig. 239 we did not recognise as a picture of talipes calcaneus, as it is not like any case of that deformity we have ever seen or heard of, nor in the least like Mr Gant's description of the same; but a careful search discovered it as fig. 257 of Mr Bigg's book on deformities. Fig. 300, illustrating the amputation of the ankle-joint, is the old one, so thoroughly incorrect, to which Sir W. Fergusson has been so faithful: we rejoice to see so many marks of tear and wear on its time-honoured, but mistaken, lines. It soon will not be worth stealing.

A momentary gleam of novelty cheered us in fig. 278, but, alas! it was only another old friend turned upside down. It will, certainly, rather perplex any ingenuous youth who may attempt to reconcile the diagram with the description; but we know it well, and where it first appeared.

Another pair of old acquaintances are introduced in p. 741, to illustrate the old operation of putting a style in the lachrymal duct, as if Mr Bowman's labours had been in vain.

In bringing the ungrateful task of criticism to a close, which might be indefinitely prolonged were there any need, we are confident that the author must be conscious how far he has come short in the very difficult task he has set himself. A wider grasp of principles, a larger experience in teaching, and a little more practice in writing English, are necessary for success in an undertaking of such magnitude as this is, and a less liberal use of paste and scissors, and a more careful selection of old opinions as well as of old diagrams will make the work smaller but more useful.

Could we believe the resemblance between Mr Gant's index and that of Mr Erichsen, pointed at by another critic, to be more than accidental, a more severe style of criticism would be necessary than our gentle suggestions.

Diseases of the Rectum, their Diagnosis and Treatment. By WILLIAM ALLINGHAM, F.R.C.S., Surgeon to St Mark's Hospital. London: J. & A. Churchill.

AFTER some introductory remarks on the relative frequency of the diseases affecting the rectum, and the general means to be employed for their recognition, the author first considers the subject of fistula in ano.

His remarks on the method of examining a case of fistula are excellent, and his hint in regard to the importance of detecting the existence or non-existence of other disease in the canal is well worthy of note.

In connexion with this subject the author makes some interesting observations on "fistula in conjunction with phthisis." He computes that a tubercular affection of the lungs exists in 14 per cent. of all cases of fistula, and in regard to the question of operating in such cases says, "I must not be understood to advocate wholesale indiscriminate operations upon *tuberculous* patients; but I mean that if care be taken in the selection of the proper cases, avoiding interference, if possible, with *rapidly advancing* phthisis, and the operation be performed discreetly at the right time of the year, and with favourable surroundings, the patients will generally do well, and be benefited and not damaged by the cure of their rectal malady."

Hæmorrhoids is the affection next treated of by Mr Allingham, who, after a careful account of the disease, directs attention to cases in which some uterine complication exists, and advises that unless the uterine disease is properly treated, it is useless to operate on the piles.

In his description of the operative treatment of internal piles, the author discusses the various operations which have been suggested. In regard to the treatment with the clamp and cautery, Mr Allingham observes, "I have employed it in more than seventy very varied cases of prolapsus and internal hæmorrhoids; at the same time I beg most strongly to demur to the assertions which have been made by Mr Smith respecting it." He then refers to several cases in which pyæmia and death had followed this operation, and further remarks that his experience is opposed to the assertions of Mr Smith in regard to the rapid recovery and slight suffering after the operation. The author prefers the operation devised by the late Mr Salmon, which consists in separating "the pile from its connexion with the muscular and sub-mucous tissues upon which it rests; the cut is to be made in the sulcus, or white mark which is seen where the skin meets the mucous membrane; and this incision is to be carried up the bowel, and parallel to it, to such a distance that the pile is left connected by an isthmus of vessels and mucous membrane only." After this has been done, a strong silk ligature is to be tied round the neck of the pile. Each pile is to be thus treated separately and then returned within the sphincter.

After some remarks on "hæmorrhage after operations upon piles," and some chapters on fissures, polypus, ulceration, and stricture of the rectum, procidentia recti, pruritus ani, and impaction of fæces, which are all deserving of study, the author considers cancer of the rectum. In this sad disease he advocates the operation of lumbar colotomy as a means of relieving temporarily the painful symptoms. As a result of many dissections, and an experience of thirteen cases in which he has performed this operation for cancer, Mr Allingham gives some very valuable rules for the more certain finding of the colon, in performing Amussat's operation. A brief notice of "rodent ulcer," neuralgia, inflammation, and gonorrhœa of the rectum, conclude the work, which we cordially recommend as well deserving the careful study of physicians and surgeons.

Lectures on the Clinical Uses of Electricity. By J. RUSSELL REYNOLDS, M.D., F.R.S., etc. London: J. and A. Churchill: 1871. Pp. 112.

THESE lectures were delivered during the summer of 1870, in the University College Hospital. They appeared at the time in the pages of *The Lancet*, and are now republished in a revised form. They are, as their name indicates, strictly practical in character, and are confined as closely as possible to ascertained facts in regard to the clinical use of electricity in the diagnosis and treatment of disease. There are hundreds of medical men accustomed to think that they know a little about electricity, and who make use of it practically in the treatment of disease, and who yet have very vague ideas respecting its forms and modes of application, as well as of the various diagnostic and therapeutic uses to which electricity may be applied, as well as of the form most suitable for any special case. For such this handy little book will be both instructive and convenient, as it conveys a great deal of information in small bulk and in clear readable English.

After a few introductory remarks on the clinical uses of electricity, on the limit of its value in diagnosis, and on its degrees of value in therapeutics, Dr Reynolds proceeds to describe the franklinic, galvanic, and faradic forms of electricity, noting shortly how these forms are produced, and how they are best employed. Then follows a notice of what electricity can actually do, 1st, as a purely chemical agent, and 2d, as a so-called vital agent, that is, producing special effects on nerve, muscle, skin, etc. The chapter on the diagnostic uses of electricity, which comes next, is specially instructive, as is also that on its therapeutical applications, which concludes the work. The appendix contains a clear and concise statement of the requirements of an electrical room. The whole work is so terse and compressed that we have thought it better to illustrate its nature by a summary of its contents than by any quotations, which, torn from their context, could only feebly convey the highly practical and generally useful nature of the instruction it contains.

Text-Book of Skin Diseases, by Dr Isidor Neumann. Translated from the Second German Edition by ALFRED PULLER, M.D. Ed. London: Robert Hardwicke: 1871. Pp. 329.

THOSE acquainted with the admirable work of Hebra on diseases of the skin will be at no loss to perceive whence our author has derived his inspiration. Dr Isidor Neumann is very well known as a distinguished exponent of the Vienna school of dermatology; and as the English translation of Hebra has its circulation to a certain extent limited by its forming two of the volumes issued by the new Sydenham Seciety, and therefore not readily procurable by those beyond its pale—whose numbers we hope are few—this volume will be welcomed as a cheaply attainable work, which, moreover, possesses merits peculiarly its own. In particular, we may refer to the sixty-seven woodcuts which illustrate its pages, which are taken from casts of those employed in illustrating the original, and are well executed, clear, and distinct. We cannot, however, pay a similar compliment to the typography, and the paper also is not quite what we are accustomed to, and, but that it is enclosed in cloth boards, resembles much the "fozy" stuff of olden German volumes; while, amongst other errors, the word "conidia" loses all its significance by being so spelled, leading one to think more of dust than of fructification, though possibly something may be said in this respect against its being an absolute error. In speaking of the destruction of lice, often a very necessary operation for the comfort, not only of the patients but of those who may come in contact with them, Dr Neumann recommends cutting the hair short and rubbing the head with petroleum, carbolic acid (1 to 8), and Peruvian balsam; while to preserve the long hair of women, he recommends it being dusted with Sabadilla powder—making no mention whatever of the stavesacre, Delphinium staphisagria, the seeds of which, pounded and made into an ointment with lard, a lotion with vinegar, or a tincture with spirits, form by far the simplest, the most comfortable, and the most efficacious agent for the destruction of lice on the clothes, body, or head we are acquainted with—not only killing the lice, but addling their nits, and, what is of more importance, removing at once that intolerable itching which affects some people for days after a louse has bitten them, or cleaves to the skin in the neighbourhood of the nits so long as they are alive. In common with many dermatologists, he speaks of favus as readily curable by his favourite application, which seems to be epilation, followed by a carbolic acid lotion (1 to 8); and as he seems to have no alternative but friction with turpentine, olive-oil, or croton-oil, we hope it may prove successful. A really good and easily applicable cure for favus is still a desideratum; epilation is good and successful, if rapidly completed, when the parasite is confined to the hair; but when the scalp is infiltrated with spores it is useless. Oil is of no avail, because the spores are found in the sebaceous glands, and are, therefore, able successfully to resist the action of oil; we may, indeed, repress their growth, but we can never thus kill them, for we know that growth may remain in abeyance for thousands of years, and yet start into life so soon as favourable circumstances are attained. Croton-oil, like chromic acid, may throw off both spores and cuticle, the latter being undoubtedly the best means of applying this slowly cauterant action; yet it is not free from danger, as may be readily conceived. On the other hand, turpentine is a very likely substance to permeate and addle the spores, but it is also to many skins rather too great an irritant to be freely applied; but the milder turpentines, styrax and Peruvian balsam, are not irritant, and possibly a combination of them with carbolic acid, which of itself is useless, or only temporarily useful, like oil, may yet be found the most efficacious agent. Certainly nothing as yet known acts in this disease *tuto*, *cito*, *et jucunde.*

Neumann states that when styrax and Peruvian balsam are used in itch, the eczematous condition of the skin is not rapidly removed; in this he labours under some mistake, for this mode of treatment is not more remarkable for the rapidity with which the itch insect is destroyed than for the speedy cessation of the accompanying eczema. We cordially recommend this book to our readers as a useful addition to dermatological literature.

An Introduction to Pathology and Morbid Anatomy. By T. HENRY GREEN, M.D. Lond. London: Henry Renshaw: 1871. Pp. 304.

THIS little work forms really an admirable introduction to the subject of which it treats; but it is more, it is actually a condensed special treatise on general pathology, giving first a pretty full account of the general pathology of each process, adding subsequently a shorter notice of the same process as it occurs in the several organs and tissues of the body. The latter part of the work is much too curt to be satisfactory; the former is fuller and more complete; and, pending the publication of that work which will do for medicine what Paget has done for surgery, it may be accepted as a welcome instalment by the British medical student. It is well printed, on good paper; but the state of pathology in Britain may be learned from the fact that by far the larger proportion of its admirable and clearly-printed illustrations are mere copies from those of German authors. The science of pathology is perhaps the most important of all those which are subsidiary to therapeutics, yet how is it looked down upon here. If we teach botany, a handsome income will reward our efforts; if we practise medicine, surgery, or midwifery, we may reckon our income by hundreds; but pathology, upon which all our certainty in medicine is built, is considered amply rewarded by a bare pittance to be reckoned by tens of pounds; and it is a disgrace to the profession that such should be the case.

A Complete History of the Case of the Welsh Fasting Girl, with Comments. By ROBERT FOWLER, M.D. Edin. London: Henry Renshaw: 1871. Pp. 307.

Report on Spiritualism of the London Dialectical Society. London: Longmans, Green, Reader, and Dyer: 1871. Pp. 412.

The Spiritualist. London: July 31, 1871.

The Physics and Physiology of Spiritualism. By W. A. HAMMOND, M.D., etc. New York: D. Appleton and Co.: 1871. Pp. 86.

WE have classed these works together, because the belief that a girl can live without food, and that a man can float through the air, belong to the same category. To inquire into either is to prostitute our reason before the shrine of—quackery, we were about to say; but the word is so often employed as synonymous with the practice of medicine without a diploma, which is not quackery, otherwise Hippocrates would be a quack, that people forget that the term really means deception. Any one who knows aught of physiology, knows that perpetual starvation is incompatible with life, and does not think it necessary to inquire further into any reported case. Dr Fowler's book contains, however, besides a complete history of the painful case of the Welsh girl, much useful information regarding cases of prolonged starvation: it possesses therefore a physiological value altogether apart from its sensational one. The other works, on the other hand, are simply valueless—even that of Dr Hammond, for where a subject possesses neither a physical nor a physiological substratum, it is impossible to supply it by any inquiry directed to that end. Levitation is an old story, dating at least from St Philip Neri in the sixteenth century, yet we have got no further with it than that it is still as inconsistent with physical laws as it then was, still as unproductive of benefit to mankind, still as utterly untruthful as a matter of fact. The words of Algazzeli, with which Hammond concludes his work, sufficiently describe the futility of his labours:—"If, when I have satisfied myself that ten is more than three, some one should say to me, 'Not so; on the contrary three is more than ten, and to prove to you the truth of my assertion I will transform this rod into a snake;' if, then, he should so transform it to my entire conviction, the certainty I should have of his error would not be shaken. His performance would produce in me only an admiration of his skill, but I should not doubt the truth I had acquired." Words which contain a truth we ought all to remember, and which has been very aptly re-stated in recent times. "The new is coming, I doubt not; but it must grow organically out of the old—not root the old up, and stick itself full-grown into the place thereof, like a French tree of liberty—sure of much the same fate. Other foundations can no man lay than that which is laid already, in spiritual things or in physical; as the professor and his school will surely find.

"You recollect to whom the Bible applies that text?

"I do.

"And yet you say you cannot answer the professor?

"I do not care to do so. There are certain root-truths which I know, because they have been discovered and settled for ages; and instead of accepting the challenge of every I-know-not-whom to re-examine them, and begin the world's work all over again, I will test his theories by them; and if they fail to coincide, I will hear no more details of the branches and flowers, for I shall know the root is rotten."[1] We may take levitation as a crucial theory of spiritualism; though not new, it has been recently evolved as a modern phase of this would-be science: pop Mr Home down a coal-pit, and let spiritualism sink or swim—float we should say—along with him.

Lessons in Elementary Physics. By BALFOUR STEWART, LL.D., F.R.S., etc. London: Macmillan and Co.: 1870. Pp. 372.

THIS little book is a perfect *multum in parvo.* Though the type used is small, it is clearly and distinctly printed, and its comparatively few pages contain a great amount of matter; for the accuracy of which the name of the author is a sufficient guarantee. The illustrations are well drawn and carefully printed; and altogether it is not only one of the most comprehensive but one of the most readable works on this important subject.

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[1] Kingsleys "Phaeton."

A Practical Treatise on Bright's Diseases of the Kidneys. By T. GRAINGER STEWART, M.D., F.R.S.E., F.R.C.P.E., Physician to the Royal Infirmary, Lecturer on Clinical Medicine, formerly Pathologist to the Royal Infirmary, and Lecturer on General Pathology, etc., etc. Second Edition. Edinburgh: Bell and Bradfute: 1871.

THE author may be congratulated on the fact that a second edition of his treatise has been so soon required. No better proof need be given that it has been well received by the profession. The present volume is, we perceive, considerably larger than its predecessor, but the form and nature of the contents are the same. The increase is chiefly due to the introduction of illustrative clinical cases, so as to render the series more complete; and some fuller explanations are also given on some questions of pathology, and details of treatment. These additions are improvements, and we have therefore to repeat, in regard to the present edition, the recommendation we gave of the first, as an excellent contribution to the subject of renal disease.

Part Third.

MEETINGS OF SOCIETIES.

MEDICO-CHIRURGICAL SOCIETY OF EDINBURGH.

SESSION LI.—MEETING II.

Wednesday, 6th December 1871.—Dr BENNETT, *President*, in the Chair.

I. *Dr Joseph Bell* showed:—

1. THE BLADDER AND PROSTATE of an aged man who had been under his care for retention of urine, along with profuse and exhausting hæmaturia. The bladder was about four times its natural size. The prostate presented the rare lesion of encephaloid degeneration, being as large as a small apple, soft, and vascular. The anterior portion of the prostatic urethra was dilated, so as to admit nearly two fingers, while just at the entrance into the bladder, an enlarged third lobe projected over and occluded the urethra.

2. THE CONTENTS OF AN ORBIT which he had removed from a female, æt. 60, on account of a melanotic cancer. The eyeball had been excised some months previously, by a surgeon in England, for the same disease, which returned in eyelids and muscles, filling up the whole orbit, and projecting in front. Dr Bell had removed the eyelids and the whole soft parts of the orbit, including the

orbital fascia and periosteum. The patient made a good and rapid recovery, and was quite well when last seen, two months after the operation.

3. A URIC ACID CALCULUS, WEIGHING 2 OUNCES, which he had recently removed by the ordinary lateral operation from an aged farmer. The symptoms had been very severe and of long standing. He made a good recovery.

4. A URIC ACID CALCULUS, COATED BY PHOSPHATES, WEIGHING OVER 6 DRACHMS, which he had recently removed by the lateral operation from a child, æt. 6. The stone was remarkable in its shape and structure, as a bulbous neck occupied the prostatic portion of the urethra, while the pear-shaped body of the stone lay in the bladder. The patient had been cut on a former occasion by the late Mr Syme, and the whole growth of the present stone must have been within eighteen months. He made a good recovery.

5. A MULBERRY CALCULUS, LESS THAN A WALNUT, which he had removed by lithotomy from a ploughman, æt. 60. The symptoms had been of very long standing. An attempt to crush the stone, which had broken it into two halves, created so much irritation as to render lithotomy advisable. The operation was attended by little irritation, and the patient made a rapid recovery.

II. *Dr Muirhead* exhibited the BRAIN of a man, aged 59, who had come into hospital perfectly speechless. After remaining there for five weeks, he gradually recovered articulation, so as to be able to make himself perfectly intelligible and to read distinctly. He was sent to the Convalescent House, and after remaining there about a month, returned to hospital, suffering from general dropsy and an erythematous condition of the skin, which gradually increased; symptoms of pulmonary congestion ultimately set in, and carried off the patient. On examining the brain, an effusion was observed over the whole surface, with a general congestion of the organ. In the middle lobe, on the right side, was observed a triangular depression containing serum, which escaped on puncturing the arachnoid. Externally, on the left side of the brain, on a line continuous with the sylvian fissure, was found a marked softening of two to three inches in length, and one inch in breadth. On examining the middle cerebral artery and its larger branches, no embolism was discovered, though, from the rough examination at that time made, it was impossible to say that no capillary embolisms existed.

The heart, kidneys, and spleen of the same patient were also exhibited. The heart was much hypertrophied, but otherwise tolerably healthy. This state of the organ was, no doubt, due to the intertubular nephritis of the kidney, producing a well-marked specimen of cirrhosis of the kidney. In the spleen was found a recent embolus as well as a cicatrix, indicative of the absorption of a former one.

III. *Dr George W. Balfour* next read his paper, NOTES OF A

CASE OF ENLARGED SPLEEN, SUCCESSFULLY TREATED BY INUNCTION OF THE BINIODIDE OF MERCURY OINTMENT.—This patient, Robert Kilpatrick, an old soldier aged 42, had been many years in India, where he had suffered from syphilis, and from several attacks of ague, having had recurrences of the latter since his return home. During his Indian service he had led rather a dissipated life, and on his return he had been under treatment in Netley Hospital for the disease of which he now complained, but which latterly had much increased. He came under treatment in Ward V., on 14th October 1870, complaining of great tumidity of the abdomen, with a large tumour on the left side; he was also found to have a reducible inguinal hernia; but except that his appetite was poor, his bowels rather costive, and that he had occasional, irregular, and slight attacks of ague, his condition was otherwise normal. On examination, the abdomen was found to be much distended, measuring 46 inches round the umbilicus; with the exception afterwards to be mentioned, it was uniformly soft, yielding, and gave on percussion a clear, full, tympanitic note; the liver dulness was normal, 4 inches vertical in the mammary line, and left lobe not diminished. At the left side a large tumour was to be felt, extending downwards and forwards; the skin was freely movable over it, and on its anterior border a distinct notch was to be felt about 3 inches beneath the ribs. Over this tumour the percussion was dull, extending from its most anterior and depending portion upwards and backwards, to within 3 inches of the spine for a distance of 14 inches, the greatest transverse breadth of the dulness, just beneath the ribs, was 5½ inches. This tumour was regarded as an enlarged spleen of malarious origin, and the patient was directed to rub over it every day a small bit of the ointment of biniodide of mercury, the size of a small horse-bean or large pea, freely exposing his person to the fire during the process. His aguish symptoms were combated by the use of quinine, and subsequently ferruginous tonics, with arsenic. During the process of inunction he suffered much from the heat causing expansion of the intestinal gases, and to relieve this, various carminatives and absorbents were tried—amongst the rest, Belloc's charcoal freely administered—without relief. At last, bethinking myself that possibly the liver, though not appreciably affected, might yet labour under some interstitial derangement capable of lessening the amount of bile secreted, and that the tympanitis might be due to defective digestion, and consequent putrefaction of the food, ox-gall pills were administered shortly after each meal, with the effect of rapidly diminishing the amount of intestinal flatus, and relieving the man's discomfort. The abdominal tension ceased, and the abdominal walls became so flaccid, that the tumour could be readily grasped by the hand. He was dismissed improved, at his own request, on 9th February 1871. On that day his abdominal parietes were quite flaccid; he measured round the umbilicus 34 inches; the large spleen could be felt projecting from beneath the ribs, its hilus being 2½ inches beneath the ribs; the transverse dulness measured 4½ inches, and the longitudinal dulness extended downwards and forwards from a vertical line dropped from the posterior fold of the axilla for a distance of 9½ inches. His health was much improved, and the tumour, as you will perceive, was considerably lessened, while, though he had used the ointment more freely than was desired, he had never been salivated, and only suffered for a day or two from slight soreness of the gums, the result of using the inunction over the tender new skin, following slight vesication, produced by over-zealous application of the remedy. He was supplied with a box of the ointment, and desired to continue its use.

On the 3d of June Kilpatrick was readmitted, labouring under extensive ascites, for which, along with other treatment, he was twice tapped; he died exhausted on 13th July 1871. On this occasion his splenic tumour was felt much reduced, projecting only about two or three inches beyond the ribs, but no exact measurements were taken. At the autopsy on 15th July the body was much emaciated, the skin and conjunctivæ slightly tinged with yellow. The thoracic organs presented no points of interest. The liver looked as if somewhat shrunk, but really weighed 4 lbs. 4 oz.; there were dense perihepatitic adhesions over the whole organ; the surface was extremely irregular, presenting numbers of nodular projections, alternating with puckered depressions, many of the nodules being as large as the segment of a boy's marble. Over the upper surface of the left lobe there was a white stellate cicatrix on the capsule, measuring 1½ inches in its longest diameter; there were also several other cicatricial thickenings, not quite so well marked, over the surface of the right lobe; on section, the surface was apparently distinctly granular and cirrhotic, but the texture, though tough and fibrous, was not stiff as in an ordinary case of cirrhosis, and under the microscope no excess of fibrous tissue could be made out, the several sections examined seeming composed of hepatic cells, with a little free granular matter, and not distinctly differing from healthy liver tissue. The spleen weighed 2 lbs. 3 oz. Over its convex surface there was in the capsule a patch of cartilaginous thickening about 3 inches in diameter, and ¼ of an inch in thickness; there were some perisplenitic adhesions to the diaphragm, the capsule was flaccid, as if the organ had formerly been larger; on section the organ was about normal, neither pulpy nor very fibrous; it was claret-coloured, mottled from irregular congestion. The kidneys were slightly granular under their capsules, congested, but otherwise normal. He never had albuminuria. When I speak of a successful treatment of this case, it is obvions that I use the word comparatively; it was neither successful as to the ultimate result to the patient himself, nor altogether successful as to the complete diminution of the spleen; but when we find in this case, in the face of a liver so diseased as ultimately to produce a primary and fatal ascites, and which must, therefore, have tended greatly to maintain an enlarged condition of the spleen, that nevertheless that organ was reduced by a few months' treatment to an amount which must have equalled at least one pound, and probably was nearer two, I think I am justified in considering the treatment, under the circumstances, as not only comparatively, but even as highly successful, and as fully bearing out the encomiums pronounced upon it in relation to this disease by Dr Maclean.[1]

Dr Bennett remarked that a case of enlarged spleen successfully treated, and yet terminating in death by dropsy, was certainly open to criticism. The tendency of all such organic enlargements was to diminish imperceptibly, growing gradually harder and more nodulated, causing compression of large veins, and thus producing dropsy, of which the individual died, as in this case. Very many so-called cures were thus not due to the remedies employed, but to the ordinary course of the pathological process. Thus he himself had at one time entertained a strong belief in the efficacy of Valsalva's treatment of aneurism; and in one particular case of aneurism of the mesenteric artery, both he himself, as well as Dr Christison, under whose care the patient had also been, firmly believed that the consolidation of this aneurism, and consequent improvement of the patient's health, had been due to this treatment. The man, however, died suddenly, poisoned accidentally by aconite; and it was then found that the consolidation had been actually due to retardation of the circulation through a large aneurism developed in the aorta above the primary sac. Dr Balfour believed that the diminution of the splenic growth in his case was due to the inunction of biniodide of mercury ointment, but there was no proof of this. The remedy employed was capable of acting as a violent mercurial, and in one case which he (Dr B.) had brought before the Society about a year ago, it had been productive of very serious results in deteriorating the man's health; it was a remedy not free from danger; whether it might also be productive of good was a matter of opinion. Friction as a means of discussing indolent tumours was, no doubt, an appropriate remedy, but he doubted if the addition of any active remedy was beneficial; it could not pass straight through the skin to the affected part, but must act constitutionally, as had indeed been the case in this instance. It was a matter of grave doubt whether mercurial preparations were not rather productive of harm than good in cases of enlarged spleen and liver; and he believed that any change in size thus produced was due rather to natural pathological causes than to any problematical effect of the drug.

Dr Balfour replied, that in detailing this case he had not forgotten the ordinary pathological sequence in organic tumours; indeed it was the recollection of this which had mainly influenced him in bringing this case before the Society. He believed it was contrary to all pathological experience that an enlarged spleen should diminish with a gradually increasing contraction of the liver, a contraction which, in this case, so excessively compromised the portal circulation as to produce a fatal ascites. In such circumstances, enlargement and not diminution of the size of the spleen was the ordinary pathological sequence of events; and the diminution of the spleen in this instance by one or two pounds, notwithstanding this unfavourable complication, he believed to be the strongest possible proof of the efficacy of the remedy employed.

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[1] Reynolds's System of Medicine, vol. i. p. 68.

In regard to the treatment of aneurism, the remarks made by Dr Bennett could not apply to the cases he had exhibited at the last meeting of the Society. In the one case (Rice) the consolidated aneurism was so near the heart that there was no room for the development of a secondary aneurism above it capable of exercising such an influence as that referred to. In the other case (Wilson) the primary abdominal aneurism had been felt to be consolidated for three years before the development of the other one above it. During all that time the hard nodule was to be felt with a comparatively sound (as to calibre at least) aorta above it, and the secondary aneurism was only developed at the end of that period apparently by the unfavourable influences to which the poor man had been exposed in the course of earning his daily bread by manual labour.

IV. *Dr Bennett* then gave his VALEDICTORY ADDRESS, in which he stated, that what had struck him most during his two years' tenure of office, was the many disputed points in practical medicine which only seemed to require an additional expenditure of time and labour in order to settle them once and for ever. With all the modern appliances of chemistry, physiology, and histology, there was hardly any proposition in medicine which could not be fully determined by combined labour, provided money were forthcoming —for time and toil must be paid for; and it was unworthy of a great nation, and cramped the requisite inquiries, to leave to private enterprise what ought to be the duty of the State. After all, much money was not required, the Government cattle-plague inquiry, which had completely settled that question and remunerated the investigators, only cost £800; and a committee in Edinburgh which had solved with equal certainty and satisfaction the question as to the cholagogue action of mercury, without remunerating the inquirers, cost £116. The want of means for prosecuting such inquiries was nowhere so strongly felt as in connexion with our large infirmaries, where no question could, for want of them, be prosecuted to a satisfactory conclusion.

The meetings of this Society had been fraught with much instruction to those who had attended them, and he trusted that they might be stimulated so to work together in the way he had pointed out as ultimately to produce permanent beneficial results. In the meantime every encouragement should be given to individual exertion, which such societies as the Medico-Chirurgical were well calculated to promote.

He did not think it necessary to recapitulate the names of the good and true men they had lost from their number during his tenure of office, because their biographies had been already so fully published by the literary and medical press that he felt that any further allusion to them was quite superfluous.

In regard to the future conduct of the business of this Society, he pointed out that when pathological specimens were shown, advantage was frequently taken of their exhibition to dwell at length on surgical procedures, which, from being brought forward at this period, could not be criticised, and were therefore allowed to pass unchallenged, though many might dissent from the views promulgated. It would be invidious to signalize one offender where all had more or less erred, but he trusted that for the future such a proceeding should not be permitted, and that pathological specimens should only be exhibited as such, all comments on the surgical or other treatment to which they may have given rise being strictly confined to the ordinary communication, when they might be criticised with that fulness and freedom which they deserved. Dr B. also stated, that he thought the funds of the Society could not be better expended than in procuring the services of a reporter, whose services would make the Society's proceedings more full and valuable than they had hitherto been. He concluded by thanking the Society for the honour they had done him, and for the courtesy with which he had been invariably treated by the members.

At the meeting for private business subsequent to the conclusion of the public business, the following gentlemen were elected office-bearers for the ensuing year:—*President*, Dr P. D. Handyside; *Vice-Presidents*, Dr Matthews Duncan, Professor Lister, Dr Robert Paterson; *Councillors*, Dr James Fraser, Dr John Chiene, Dr C. H. Groves, Dr Wyllie, Dr Gordon, Dr John Sibbald, Dr J. R. B. Cunynghame, Dr William Craig; *Treasurer*, Dr George W. Balfour; *Secretaries*, Dr Argyll Robertson, 40 Queen Street; Dr Claud Muirhead, 7 Heriot Row.

OBSTETRICAL SOCIETY OF EDINBURGH.

SESSION XXXI.—MEETING II.

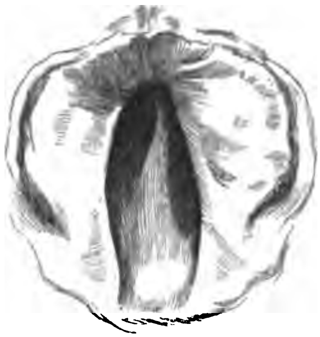
22*d November* 1871.—Dr Bell, *President*, in the Chair, afterwards Dr Thomson.

The following Fellows were elected office-bearers for the next two years:—*President*, Dr Ramsay Thomson; *Vice-Presidents*, Professor Simpson and Dr Matthews Duncan; *Treasurer*, Dr James

Young; *Secretaries*, Dr R. Peel Ritchie and Dr Andrew; *Members of Council*, Dr A. Keiller, G. Stevenson Smith, and T. H. Pattison.

Peter A. Young, M.D., Portobello, and Alexander Ferguson, F.R.C.S.E., Peebles, were admitted Fellows of the Society.

I. *Dr James Young* showed a CAST OF A CONGENITAL MALFORMATION OF THE PALATE, which was taken by the late Mr Ayton. In this case the child was born at the full period of utero-gestation, and was in every respect healthy and well developed, with the one exception, namely, entire absence of the hard and soft palate. The child could not suck, and was consequently brought up by spoon-feeding, and throve pretty well. Bronchitis caused the child's death at the age of 2½ months, and the question arises as to whether or not the disease might have been so far superinduced by the congenital deficiency.



Dr Jefferiss said he had recently met with a similar case, where there was no hard palate, but the child did well.

Dr Ritchie remarked that many of these cases die in early life. He remembered one case in the Children's Hospital where there was entire absence of the hard palate.

II. *Dr Keiller* exhibited a FŒTUS which had been expelled prematurely from placental disease. It was the second pregnancy, and he had previously shown a fœtus from the same patient. In the first instance, the placenta was affected by hydatids. There was no history of syphilis.

III. *Dr James Young* then read his paper, entitled,

INTERESTING CASE OF NEPHROCYSTOSIS, FROM AN OBSTETRICAL POINT OF VIEW.

The patient who was the subject of this most painful disease, had a long and weary period of suffering. I had not the opportunity of observing the progress of the disease from its commencement, having only seen the patient during the last two years, but I may be allowed to give a very brief outline of the case, which I have culled from various sources:—

Isabella ——, aged 43, was born in the neighbourhood of Berwick-on-Tweed, and enjoyed very good health for thirty years of her life. Her parents were healthy, the father having lived to 80, and mother to 60 years of age. There were nine children, all healthy and alive. Isabella —— began to complain of pain over the right hypochondriac region 13 years ago, after she had attempted to move or lift a heavy drawing-room chiffonier. Six months thereafter she consulted the late Dr Sibbald, who discovered a small tumour or enlargement below the liver. Four years passed on, the patient only slightly complaining, and early in 1862 she consulted Dr Alexander Simpson, and remained under his care more or less for three years. I am not aware what was the diagnosis, or prognosis, which Dr A. Simpson made out, but I believe he pronounced it to be a growth in the right side, about the size of a large egg, and not likely to be easily, if ever, removed. From 1865, when Dr Simpson left Edinburgh, to 1869, she was under no medical care, not having suffered much inconvenience beyond occasional pain. In August 1869 she consulted me, and, on careful examination, I discovered the existence of a large tumour—possibly, I thought, ovarian—solid, and very elongated, distinctly filling one side of the abdomen. It was movable and painful on pressure. She was not, however, prevented fulfilling her usual duties as a housemaid. In October 1869, we had a consultation with an eminent physician, who looked on the case as a fibroid tumour of the uterus, but recommended no interference of any kind. The tumour continued to increase in size until December 1870, when I asked the same medical man to see her. At this time the size of the tumour was very great, and more painful on pressure. No operation was thought of. Patient became sleepless, and suffered much from constipation. I recommended her to leave her situation, and to take perfect rest. Gentle aperients were ordered, and anodyne applications to the right side. In June 1871, I ordered her to go home to Berwickshire, where her general health somewhat improved. In August last she came to town, when I found the tumour more painful and larger. She now suffered from occasional hiccough. No other tumour had been discovered.

During the first week of October she had several slight attacks of hæmaturia. The urine was plentiful, and free from albumen. Sickness commenced, with frequent vomiting, and on the 15th she had a severe attack of bleeding from the nose. The medical man in the neighbourhood saw her, and ordered an enema, as the bowels were greatly constipated, but without any effect. Medicine was likewise rejected; hiccough became more frequent, and the stomach refused to retain almost any kind of food. I visited her on the 27th day of October, and found the *facies hippocratica* well marked, pulse very feeble and frequent, abdomen much distended and painful, and urine passed involuntarily. I ordered iced champagne and ice to eat, also Liebig's extract in beef-tea with starch per anum; an enema of turpentine and castor-oil was given next day without any effect whatever, and she died on the 31st of October. Having obtained permission for an autopsy, Dr Black and I made a careful examination of the body, with the following results:—

Heart and lungs quite healthy, likewise the stomach, liver, pancreas, and spleen. A large mass filled the whole right side of the abdomen, extending from the margin of the liver to the iliac fossa. We very carefully dissected it out, and found it to be the right kidney, of enormous growth, weighing fully 4 lbs. The tumour, as you will observe, is a pure nephrocystosis, or a cystic tumour of the kidney degenerated. We were naturally anxious to inquire into the condition of the left kidney, and discovered it also to be enlarged from the same disease, weighing 3 lbs., the existence of which had not been observed during life, the patient never having complained of pain in that side. The obstetrical aspect of this most interesting case is my apology for bringing it under your notice. *Per se*, it is not for our Society; but, in an obstetrical point of view, I think you will allow that I am justified in directing your attention to it, for during life the tumour to me assumed the appearance of an ovarian growth, and one far more able to form a correct opinion looked on it as a fibroid tumour of the uterus, proving how difficult it may sometimes be to arrive at correct diagnosis in cases where you have to deal with abdominal tumours. The preparation before you of cystic degeneration of the kidney is a comparatively rare form of renal disease. In this case, you have the tubuli uriniferi largely dilated at their multitudinous terminations. The cysts vary much, from the size you see them here to microscopical dimensions.

Dr Keiller said he had a patient under his care with a tumour of the right kidney, and in the diagnosis it came to be a question whether it might not be ovarian. It had no connexion with the uterus. Sometimes cystic tumours of the kidney in infants are so large as to obstruct labour.

Professor Simpson said that he would very much like to see the internal structure of the tumour Dr Young had shown: cystic disease results from dilatation of the tubules. Sometimes pressure on the ureters causes dilatation of the tubules, and degeneration follows.

Part Fourth.

PERISCOPE.

Physiological and Therapeutical Effects of Antidestructive Alimentation.—Dr Marvand has been publishing an account of those various aliments supposed to prevent waste, and he gives the following conclusions:—Alcohol, tea, *le maté*,[1] and coca, possess incontestable physiological and therapeutical properties; these are, 1*st*, General excitation of the cerebro-spinal system, and consequently of the functions of relative life; 2*d*, A retardation of disassimilation and a diminution of organic heat. Their influence on nutrition may be regarded from two points of view: *a*, as stimulants to the nervous system; *b*, as antidestructives. *A*, Alcohol acts directly on the sensitive apparatus of the spinal cord, indirectly on its motor apparatus. Coca acts directly on the motor apparatus, which it excites after the manner of strychnia. Coffee, tea, and *maté* act principally on the brain. Alcohol and coca are, therefore, to be regarded as drinks which excite to muscular action, while coffee, tea, and *maté* excite to thought. *B*, Besides this, they all act as antidestructives, by preventing waste of the tissues from oxidation, and by diminishing loss by secretion. *C*, Thus, we can explain how they excite to work and wakefulness, how they supplement our other aliments, and moderate our vital combustion: hence their daily increasing consumption, their utility in alimentation, and their importance in hygiène. *D*, The abuse of these aliments has, however, two principal inconveniences — 1*st*, By their excitement of the nervous system they may produce fatigue, feebleness, and even inertia of that system; 2*d*, By the obstruction which they present to the process of disassimilation, and the retardation of the phenomena of combustion, transmutation, and decomposition, which are indispensable to the continuance of life, they may cause the arrest, the suspension, or complete suppression of nutrition, and thus produce paralysis, torpor, atony, fatty degeneration, and necro-biosis of the cellular elements involved in the acts of nutrition. Thus, is explained the occurrence of alcoholism, caféism, theism, and cocaism. The therapeutical properties of these substances may be deduced from their physiological properties. They may be employed, 1*st*, As excitants of the nervous system; 2*d*, As anti-calorifics; 3*d*, As antidestructives. *B*, Their place in the materia medica is as excitants of relative and depressants of organic life. This latter action is a corollary flowing from the former; because the nerve-centres which preside over the acts of nutrition (assimilation, disassimilation, proliferation, and all the other organic changes, combustions, and decompositions) act with less power the more those centres which preside over the intellectual, sensory, and motor functions develop an excess of energy and activity, and are subject to a more forcible and durable stimulation.—*Gazette des Hôpitaux*, No. 138, 1871.

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[1] Paraguay tea, made from the leaves and twigs of the *Ilex Paraguensis*.

ON THE TREATMENT OF STRANGULATED HERNIA BY THE REMOVAL OF AIR BY SUBCUTANEOUS PUNCTURE.—Some new facts bearing on this subject are to be found in a thesis by Dr Autun.

Professor Duplony of Rochefort applied the suction-syringe to a strangulated hernia in a young soldier in which the taxis had been freely tried without success. He removed a quantity of gas. He intended to introduce a small quantity of water into the tumour, and removed the needle for this purpose, when a surgeon who was present felt the tumour, noticed a gurgling in it, which was immediately followed by the return of the bowels. Dr Duplony was in doubt whether to attribute the return of the bowel to a more full anæsthesia of the patient, or to the amount of air removed, but certainly it is a proof of the harmlessness of the operation, no symptoms having followed the puncture. The following case is from Dr Dugue of Mans:—"I was asked to assist Dr Bourdy at an operation for strangulated hernia in a woman near Mans. It was a right inguinal one of four days' standing. It contained bowel, which was much distended, and contained both air and fluid. Before operating we tried the small suction trocar. The needle being plunged into the intestine, the pump rapidly filled at two separate applications with gas and fluid. The tumour diminishing became soft. We then hoped reduction would be easy; this unfortunately was not the case, so Dr Bourdy proceeded to operate, and, after opening the sac, we found it impossible to discover the needle-hole, nor did a drop of fluid or a bubble of air escape during the operation, or when the bowel was being returned. After the adhesions were divided reduction was easy. Some hours later the bowels were moved by a purgative. Next morning the patient was quite easy. Though the aspiration was here not successful from the amount of adhesions, yet the harmlessness of the puncture is proved.

Again, in Lariboisière, Messrs Desnos and Chalvet had used Mr Dieulafoy's instrument in a puncture of the bowels in a case of hysterical tympanitis. The needle passed into the bowel, and liquid fæces had been drawn into the chamber. The patient had not suffered, nor did any signs of the puncture remain in a few hours.

Again, Mr Autun had made several experiments on rabbits with the same instrument, piercing their intestines in various directions without any bad results.

Another case is reported by Dr Phellippeaux, in the *Bulletin Général de Thérapeutique*, in a paper on various successful applications of the aspirator. In a case of strangulated hernia he made two deep punctures; each produced only a few drops of serum stained with blood. This enabled him to make the diagnosis of an omental hernia, and to postpone operation. No harm followed the punctures.—*Gazette des Hôpitaux*, No. 99, 1871.

ON VASCULAR MURMURS WITHIN THE LUNGS.—Bartels treats of cardiac systolic murmurs heard in the lungs (*Deutsch. Archiv. f. klin. Med.*, 1869, pp. 111–125), and Immermann describes a case of cirrhosis of the lung, with consequent narrowing of both pulmonary arterial trunks and of their primary branches, in which a systolic murmur could be detected in front of the heart and above it, and also in the back. Bartels observed seven analogous cases. One of them resembled that of Immermann; in five other cases there was a partial induration of the lung-tissue by chronic pneumonia. In the seventh case, the murmur existed over one lung that had long been compressed by a pleuritic effusion, but which had discharged through a fistulous opening. The effusion, however, accumulated anew, and as it did so the murmur grew weaker, but became louder again on the evacuation of the fluid. Bartels supposes the murmur to have been generated in this case by the pressure of the indurated upper lobe of the right lung upon a branch of the pulmonary artery, and that the murmur disappeared when the effusion was excessive, but returned when this had partially subsided. He also judged that it could not have arisen in the main trunk of the pulmonary artery, because it was audible only above the third rib. In the remaining five cases, he was of opinion that the murmur originated in a dilatation of the arterial branches, as a similar one is heard in certain cases of vascular goitre. The vascular channel, he supposed, was rapidly contracted by the obstruction of a considerable area of lung-tissue, the mass of the blood not being at the same time proportionately diminished, wherefore the pressure of the blood was increased within the narrowed vessels, which consequently underwent dilatation. Under these circumstances, the murmur became intensified during inspiration, for by that act the current of the blood was quickened and its pressure augmented.

TRAUMATIC TETANUS CURED WITH HYDRATE OF CHLORAL. By Dr J. SUYDAM KNOX.—Mitchel C., aged 17, sent for me 10*th July* 1871. Found him sweating profusely, jaws firmly locked, tonic spasms of all the voluntary muscles, with exacerbations whenever any one approached or addressed him, or the least air blew upon him. Pulse 120; bowels regular; urine high-coloured, and passed frequently; face drawn and anxious. He states that on 12th June, in New York, his right great toe was crushed by a falling cake of ice. 20*th June.*—Experience some stiffness of jaws followed in two days with general cramps in limbs. 25*th June.*—Called a physician, who prescribed medicine which seemed to control cramps and induce sleep. Came to Somerville, N. J., the day I was first called. Judging from his description that hydrate of chloral had been administered, I prescribed it in thirty-grain doses, to be taken every four hours in syr. acaciæ. It was taken easily, as he could swallow whenever the legs were held firmly. Lemonade, beef-tea, and brandy, with milk, were freely administered. The chloral promptly controlled the spasms, and induced sleep. At the end of four days it was administered only night and morning. 20*th July.*—He was discharged cured.—*Amer. Jour. of Sciences*, Oct. 1871.

ON A FORM OF FRACTURE OF THE BONES OF THE FACE, AND ITS DIAGNOSIS. By M. DUBRIEUL.—Certain injuries of the face are followed by anæsthesia of half of the upper lip. Different theories as to the nature of the accident are held. Jarjavay considers it a symptom of fracture of the malar bone; Richet, of the upper jaw bone, and connects the symptoms with a lesion of the infraorbital nerve. I have dissected two cases of destruction of the infraorbital nerve; coincident with the following lesions of the bones of the face. The first died so soon after his injury, without ever passing out of his state of coma, that I was unable to assure myself by experiments that the upper lip was insensible; the other lived for a month and a half, and by many experiments, I proved the complete insensibility of his left upper lip; he did not feel the entrance of a pin into that part usually so sensitive. In his case the infraorbital nerve was completely destroyed at its exit from its canal; in the first, it was divided in the centre of the canal. In both cases there was a marked flattening of the zygomatic arch. In both there was a fracture of the malar bone, above the upper jaw bone, at its outer and upper wall, the internal wall and alveolar margin being left entire. Such accidents are the result of antero-posterior violence, such as a fall on a pointed object, or a severe blow with a fist.—*Gazette des Hôpitaux*, No. 69, 1871.

COMPOUND SYRUP OF ASSAFŒTIDA.—Mr J. J. Rambo of New York calls attention (*American Journal of Pharmacy*, September 1871) to a formula for this preparation, which, he says, he has been for a number of years in the habit of preparing, to obviate the great objection felt by most patients to the disagreeable smell and taste of assafœtida, and which has prevented, to a great extent, the more general use of this valuable drug. "The formula I find to answer the purpose effectually, at the same time its medicinal qualities are enhanced by composition with syrup of wild cherry, possessing the valuable therapeutic properties of both. ℞. Infusi pruni Virginianæ Oj.; assafœtidæ ℥j.; sacch. albi ʒxxiv.; magnes. carb. ʒij. Rub the assafœtida and magnesia with the infusion gradually added, so as to make a uniform mixture, and filter; to this, transferred to a bottle, add the sugar, and agitate occasionally until it is dissolved. As a result we have a handsome syrup, which does not differ in appearance from the syrup of wild cherry. The property possessed by the volatile oils of bitter almonds, cherry laurel leaves, bark of wild cherry, etc., containing hydrocyanic acid, of removing the odour of assafœtida, has long been known, and advantage taken of this property by M. Mahair, a French pharmaceutist, to remove the odour from mortars and bottles with which it came in contact; but I am unaware that the fact has ever been applied to its administration as a medicinal agent."

Part Fifth.

MEDICAL NEWS.

CORRESPONDENCE.

(*To the Editor of the Edinburgh Medical Journal.*)

SIR,—Having during the past summer spent some time at Ben Rhydding, and having had opportunities of judging of the treatment adopted at that famous institution, it has occurred to me that a few reflections on the subject might prove not uninteresting to the profession.—I am, Sir, yours etc., MEDICUS.

BEN RHYDDING AS A HYGIENIC AND HYDROTHERAPEUTIC ESTABLISHMENT.

There are few of those who take an active part in the busy everyday life of the present century, but feel ever and anon that they must relax their efforts, or, as the ancients tersely put it, *festina lente*, hurry at leisure. This remark applies more especially to brain-workers, and such as trace their ailments to long-continued mental activity—in Britain, unfortunately, a numerous class. There is a point beyond which flesh and blood cannot endure, and some of the hardest heads and stoutest hearts in these realms daily succumb to the prevailing system of overwork. The misery induced is often incalculable. Lives valuable to the possessors, to relatives, friends, the country and posterity, are sacrificed without stint, because we urge ourselves, or are unhappily urged by circumstances, at a speed which cannot possibly last. In our strivings after fame, fortune, position, and the minor vanities of humanity, we forget, or, what is worse, practically ignore, that " the race is not to the swift, nor the battle to the strong."

Sana mens in corpore sano is a very old maxim, the true meaning of which seems to have been forgotten in modern times. The majority of people, in these degenerate days, have a belief (how acquired no one knows) that will, energy, force of character, and the like, can achieve everything possible on this side of the grave. They force their poor bodies and brains to perform work for which they are totally unfit, and, as a consequence, they break up in the process. It is thus that our asylums and watering-places are crowded, and our population decimated. Of late years, particularly since the introduction of railways, telegraphs, and cheap postage, it has been the custom, and we fear the profession has been sadly to blame in this matter, to patch up the system, so as to enable the individual to continue his unnatural exertions until he literally goes to pieces. What more common with authors, city men, contractors, speculators, and hard thinkers as a whole, than the request to be tided over a temporary illness? They tell you plainly they cannot afford to be laid up; but they forget, and the physician who temporizes apparently overlooks the fact, that the aggregate of little ailments not unfrequently begets an illness which lasts a lifetime. The laws of health and not convenience are to be studied. It is vain to suppose that, if a constitution is undermined by systematically ignoring the laws of health for twelve or fifteen years consecutively, it can be set to rights in a week or even a month. Nature never works by leaps. The links in the chain may be missing, but they were there originally; and to restore the structure to its former excellence, the links must be replaced. If time is required to disturb the finely-adjusted mechanism, time is also required to put it in order. If it is true that the body is built up by successive elaborations, it is also true that it may be broken down by successive disintegrations. The two things are diametrically opposed to each other. There is no mistake more common than to imagine that a system, vitiated and partly broken up by overwork, impure air, want of exercise, improper food, etc., can be restored to its pristine vigour by the agency of drugs. This can only be done by a change of all the conditions which caused the patient to diverge from health. To obtain the required change at a moderate cost is often a matter of exceeding difficulty, and it is with a view to directing the attention of the profession to a fitting *sanatorium* that the present notes on Ben Rhydding are published. As a residence, Ben Rhydding is nowhere surpassed in England. Situated high and dry on the sloping banks of Wharfedale, one of the finest valleys in Britain, it commands a prospect of something like 100 square miles. The country around it is altogether pastoral and magnificently wooded. It displays an embroidery of beautiful lanes, which if they can be equalled, certainly cannot be surpassed. Its grounds are something over 100 acres in extent, and as they are contiguous to a common some six miles square, and open up into an infinite variety of most picturesque lanes and bypaths, the visitor is irresistibly tempted to take long rides, drives, or walks. The beautiful river Wharfe, which glides through the valley like a silver snake, holds out additional attractions; for on its banks are situated the venerable ruins of Bolton Abbey and other achitectural remains of exceeding interest. As to the building itself, it is impossible to speak in too high terms. It is a noble pile in the Scotch Baronial style, and more resembles a ducal residence than a temple dedicated to Hygeia. Its public rooms are unusually commodious and elegant, and its sitting-rooms and bedrooms lofty, well-ventilated, and cheerful. An air of "cosy comfort" pervades the whole, and there is no confusion or bustle at any time of the day or night, in any part of the building. A more enjoyable retreat for a month or six weeks cannot be imagined. The bill of fare is likewise excellent. At six or seven o'clock in the morning, according to arrangement, the visitor is treated to a cold or tepid bath as befits his condition. He has then a short walk in the grounds, returns to breakfast at eight; attends prayers, has a look at the morning papers; goes out for an excursion or plays at rackets, billiards, croquet, etc.; returns to dinner at two with a vigorous appetite; goes out again and remains till seven, when tea is served. The food is plain, wholesome, in great variety, and beautifully cooked. This is saying something, for there is, perhaps, no nation under the sun where cooking is less understood than in Britain: with positively the best of everything edible, we make a very poor use of it when compared with our Continental neighbours. Beer and wine (chiefly claret) are indulged in at dinner by those who prefer reserving the water for the outer man. These luxuries, however, are taken in severely moderate doses. At eight o'clock the visitors assemble in the great drawing-room, where music, vocal and instrumental, enliven the shades of evening. Charades and various games are enacted, and the younger members of the community form themselves into quadrille parties, and trip it on the light fantastic toe. There is amusement for all. The grave and reverend seniors have their game at whist, drafts, or backgammon, according to preference; and thus the night passes pleasantly and quickly until ten o'clock, when the lights are lowered, a sign for general dispersion. A few minutes later, and the visitor is either in the arms of Morpheus or hastening thereto. Ben Rhydding, with its regularity, home quiet, airy rooms, substantial fare, and beautiful surroundings, forms a striking contrast to every kind of private inland or seaside lodging.

Fortunate in many things, it is in none more so than in its physician and proprietor, Dr Macleod. To this gentleman's perseverance and acknowledged ability, is to be attributed in a great measure the high position which hydrotherapeutics hold in Britain at the present day. Taking as his basis of operation the most approved facts in physiology and pathology, Dr Macleod endeavours to build up and replace what disease has vitiated and destroyed. This he believes is to be done less by the operation of medicine than by the aid of natural curative agents, which chance has, as it were, placed at his elbow. He however, like other orthodox physicians, has faith in the efficacy of medicines, and administers them whenever he can derive positive advantage from their use. His treatment is therefore hygienic, hydrotherapeutic, and medicinal in its nature. Hydrotherapeutics, in Dr Macleod's opinion, embraces the application of water in various ways, and at various temperatures and degrees of force, to the surface of the body, as well as its internal administration.

"The value of water as a remedial agent," he observes, "has not yet been sufficiently recognised. It contributes more than any other substance to the sustenance of animal life; it makes up 70 per cent. of the weight of the human body, and is as much an integral part of the blood as albumen or fibrine, for it is structurally combined with the other elements. It is the carrier of the food, the vehicle of waste, the cooler of the body, the stimulant of nutrition, and a most important agent in the development of vital force. By an agency peculiar to itself it carries into the blood, to be eliminated by the excretory glands, or to pass into the tissues, the materials which were vital yesterday but effete to-day, and the removal of which leaves the system free to perform its functions."

The Ben Rhydding water, fortunately for Dr Macleod, contains a considerable quantity of potash—a rare circumstance, and one which supplies him with a valuable agent for the successful treatment of gout, rheumatism, and diseases of the kidney. He employs the hydrotherapeutic treatment in functional diseases; in stopping the degeneration of tissues; in restoring nerve power; in removing effete matter from the system; in developing vital force in weakened or exhausted constitutions; and in retarding the too rapid advance of old age, arising from the wear and tear of professional and commercial life. When structures have become diseased, or morbid matters deposited in them; when the organism has been chronically poisoned by constitutional or blood diseases; and when organic matters natural to the system are wanting, he adds to hydrotherapeutics, local, special, and general medicinal treatment.

In Dr Macleod's hands, the local treatment of throat affections has been very successful when combined with the compressed air bath and a tonic course of hydrotherapeutics. He has been equally fortunate in his treatment of hysteria, neuralgia, spinal irritation, incipient paralysis, and torpidity of the uterus. In such cases he combines galvanism with hydrotherapeutics. Dr Macleod's sheet anchors are necessarily and naturally hydropathy, hydrotherapeutics, and hygiene. The latter is little understood in Britain, but we hope the day is not far distant when a chair of hygiene will be founded in every university.

Every form and variety of bath is employed at Ben Rhydding: the rain, plunge, sitz, and pack bath; medicated baths of various orders; the Roman, or hot air bath; the vapour bath; and last, and certainly not least, the compressed air bath. The results obtained from the employment of the several baths indicated are, with the exception of the last, well known to the profession.

The compressed air bath is deserving of special attention, both on account of its novelty and its efficacy in certain diseases. It has been found particularly beneficial in chronic bronchitis, asthma, the first stage of consumption, amenorrhœa, congestion of the liver, and deafness arising from congestion or thickening of the lining membrane of the Eustachian tube. So far as we know, Dr Macleod's is the only compressed air bath in operation in Britain. This peculiar form of bath was originally devised by Emile Tabarié of Paris, and may be briefly described as under:—

"The air bath is a chamber ten feet in diameter and twelve feet high, constructed of iron plates riveted together like those of the boiler of a steam-engine, so as to be perfectly air-tight. It is provided with double close-fitting doors, and four windows, each a foot and a half in diameter, and composed of a single piece of strong plate-glass. The interior is lined with wood, and furnished with seats and a couch for weak patients. The doors are so arranged that in case of need the physician can enter, and patients can leave the bath at any time, without affecting the pressure of air. A seven-horse power steam-engine works, at the rate of fifty strokes per minute, a force-pump seventeen inches in diameter and two feet deep, from which there passes an iron pipe four inches in diameter. This pipe opens into the bottom of a large cylinder, in which are several diaphragms perforated with numerous small holes.

"A pipe, also four inches in diameter, is connected with the top of the cylinder, and after running about 250 yards underground, opens into the air-chamber beneath the floor, which is pierced with a large number of small apertures. By this arrangement a vigorous circulation of air goes on without the patient being conscious of it. A large screw-valve is attached to the entrance pipe, and regulates the passage of air into the bath. From the roof of the chamber an iron pipe, four inches in diameter, is carried down outside the bath into a dry drain, to deaden any noise occasioned by the rapid current of air. This is the exit-pipe, and is furnished with a large screw-valve, by which the amount of air passing off is regulated. While the air is being compressed, and after the maximum pressure is reached, a sufficient quantity of air constantly enters and escapes from the bath, so that the patient never breathes the same air twice. Barometric tubes, placed within the bath, communicate at their upper extremities with the atmosphere outside, while the mercury at the lower end is subjected to the pressure of the air in the interior. The patients are constantly made aware by the indices of the amount of pressure, which is adjusted by the valve in the escape-pipe. An apparatus by which the temperature of the air entering the bath is regulated is also attached. The air forced into the bath is the ordinary atmospheric air drawn from the moors. The duration of each bath is usually two hours. During the first half-hour, the pressure of the atmosphere is gradually raised, at the rate of about one pound to the square inch every four minutes; the maximum pressure of seven pounds and a half is maintained for an hour; and during the last half-hour it is allowed gradually to diminish, until the normal state of the air is regained. The slowness in the increase and diminution of the pressure is of fundamental importance in the use of the air-bath as a curative agent. The patient ought to sit erect in the bath, and to take frequent deep and full inspirations. He ought to keep quiet, and as free as possible from every sort of excitement; and should he feel drowsy, he ought to allow himself to fall asleep.

"In the bath the respiration becomes slower, fuller, and deeper; and less need is felt for continuous breathing than in an atmosphere at the usual pressure. There is at the same time a feeling of comfort in the lungs, and an unusual facility of breathing. These effects arise from the sedative action of the bath—an action which gradually extends over the whole frame, and is often shown in a marked degree in persons suffering from asthma. Each inspiration becomes less laborious, and the incessant demand for air less clamant. This action especially affects the mucous membrane lining the air-passages, and is produced by the increased pressure of the atmosphere, much in the same way that the bougie, through pressure, gradually lessens and often entirely removes the irritation of the urethral mucous membrane. The effect here described is of the first importance in asthma, chronic bronchitis, and phthisis, for the greater number of cases of those diseases are caused by increased irritation of the mucous membrane, and increased excitability of the nerve-fibres ramifying in the lesser bronchial tubes. The increased pressure of the air also diminishes the thickness and tumidity of the submucous tissue of the air-tubes, which is so often present in many of the severer cases of chronic bronchitis, bronchitic asthma, and phthisis. When these improvements take place, the abnormal secretion of mucus and muco-purulent matter gradually diminishes, until at length the lining membrane of the lung becomes for a while almost too dry—a result which may temporarily increase the difficulty of breathing, but which is soon followed by a permanent improvement in that respect.

"Besides these purely mechanical actions, the compressed air bath enables the lung to perform its functions with more energy and completeness than it can do under the usual atmospheric pressure. For, while the air breathed in the compressed-air chamber is composed of the same relative proportions of its component gases, it contains absolutely a greater amount of each of them. An increased quantity of oxygen is thus presented to the blood, and that under circumstances peculiarly favourable to its absorption—namely, the increased pressure of the atmosphere sustained during a lengthened period. This increase of function within the limits of healthy action is of the first importance in the congested state of the lung which accompanies, more or less severely, all chronic affections of that organ; for, however congested an organ may be, it is relieved when the organ is again enabled to perform its functions with full vigour."

The efficacy of all kinds of baths in giving tonicity to the system, and in bracing up relaxed organs, cannot be overestimated. Water, however applied, produces ultimately a soothing effect. If very cold, it communicates a shock to the system; but the shock, if properly applied, is short-lived, and the exhilarating warmth produced, and the fine flow of spirits which supervenes, is enduring. If the water be very warm, a feeling of oppression steals over one; but this too is speedily followed by a gentle perspiration, which wonderfully relieves the system.

He who can endure, without discomfort, the high temperature of the old Roman or modern Turkish bath, and submit himself, *piping hot*, to the cold douche, experiences a luxury which it is impossible to describe. He feels his earthly tabernacle literally swept out; and, if he is of a keen scent, he may even enjoy the peculiar but pleasant aroma of his own purified humanity.

There are few who have experienced the delightful sensations produced by the pack bath who are not rapturous in its praise. To one whose brain is racked, or whose nervous system is shattered, nothing can possibly be more agreeable or soothing. The marked advantages to be derived from wet compresses applied to the abdomen are, moreover, not to be overlooked. They often do for the alimentary canal what an entire druggist's shop could not. To realize the extent of the benefit derived from a regular course of bathing, it is only necessary to bear in mind that the mucous membrane of the entire alimentary canal is a modification and continuation of the external skin of the entire body—the two forming a complete envelope of skin. If, therefore, the outer or natural skin is stimulated by means of the bath, it follows that the mucous membrane of the stomach and intestines is stimulated indirectly. It is thus that bathing assists in curing dyspepsia, and that melancholy brood of symptoms which invariably accompany it. What physician is there who is not occasionally driven to despair by the utterly wretched appearance of his dyspeptic patients? They are timid, nervous, cold creatures, who love the fire as they love life; who abhor water with the horror of a hydrophobic patient; and who shuffle about their rooms, even on bright days, afraid of the shower which is perchance a day or a mile distant. They do the grumbling for the whole British constitution, and yet at heart they are kindly, good people. Genii of the stream, take them away to your fairy haunts and souse them well. They will soon become as enamoured of the water as Narcissus was of his shadow!

There is perhaps nothing that contributes more to enjoyment and longevity than regular bathing. Our climate is a variable one, and to protect ourselves from its sudden onslaughts, we must harden our bodies by a free exposure to water and air. We must go out in all seasons, and avoid as much as possible heated rooms and late hours. The old Romans were, and the modern Gauls are, aware of the immunity to be enjoyed from a free contact with air and water. Was not the "garb of old Gaul" expressly designed for ventilating the outer man? And did not the ancient Greeks and Romans—yea, the more antiquated Egyptians—erect costly baths of marble and other rare stones?

Speaking generally, the four factors in the preservation of health are,—bathing, early hours, regular exercise, and moderate living. The mass of our population, unfortunately for itself, neither bathes, goes to bed early, nor exercises. To make matters worse, it greatly over-eats and over-drinks. The result is in many cases disastrous, and unless some strong movement be inaugurated to correct those abuses, the chances are that the old British lion will lose his fine proportions and the courage for which he is so justly prized. The medical profession has much power in directing the energies of the people into proper channels; and we hope the time has arrived when it will raise its voice for the erection in every town and village, of public baths, gymnasiums, and sanatoriums, as by these perhaps more than by anything else longevity and happiness are to be promoted. Meanwhile, and by way of parting, let us recommend to all whom it may concern, a brief sojourn at the famous Ben Rhydding; an establishment at the head of its class, and one whose resources for effecting rapid and permanent cures, in fitting cases, are in some senses unlimited.

OBITUARY.—We regret to have to record the death of DR JOHN MACKENZIE, of Grantown, Inverness-shire. But yesterday he was one of our most attentive and diligent students, and his short professional career has been spent in the active and successful discharge of most onerous duties. Dr Mackenzie has, for the last twelve months, been House Physician to the City Fever Hospital, Tolbooth Wynd, where his uniform kindness and attention to the patients and success in the treatment of their disease, gained him their affection as well as the approbation of Dr Littlejohn, the physician in charge, and the Sanitary Committee. Up to a fortnight before his death Dr Mackenzie had excellent health; but having then got accidentally wet, the slight catarrhal irritation paved the way for the reception of the fatal poison which speedily evolved its ordinary symptoms, and terminated in death by convulsions, on the 13th ult. Another name has thus been added to the long list of medical heroes, and another victim has fallen on the shrine of preventible diseases; but though the profession may well be proud of the undaunted heroism of its members, who are always found willing to die, if need be, at their post, it does add poignancy to its regret for the loss of a promising member, to think that a more searching inquiry into the causes of such diseases, and a more active system of sanitation might certainly diminish, if it did not altogether prevent, much of this loss of young and useful lives which is unavoidable under present circumstances.

THE PRINCE OF WALES.—Since our last issue the heir to the throne of Britain has been at death's door from an attack of severe enteric fever. We are glad to think that, though not yet out of all danger, he has so far recovered as to give the strongest reason to hope that his useful life will now be spared, though complete convalescence may be expected to be tardy. The anxious and tender solicitude with which the Prince's illness has been watched throughout the kingdom, and indeed the world, by men of every creed and every nationality, affords a convincing proof of the loyalty of our nation, and of the love and respect with which our Royal Family are regarded throughout the world, a large portion of which is due to the personal virtues of our reigning Sovereign and of her late lamented consort, Albert the Good; while the self-sacrificing attention to the royal sufferer, displayed by his own immediate relatives, has tended still more to enlist the sympathies of their fellow-men. We rejoice to think that the immediate care of his Royal Highness was confided to Sir William Jenner, than whom there is no one better versed in all the phases of the insidious and serious disorder under which he labours; and we trust that the dread anxiety under which we have all laboured may give an additional impulse to the inquiry how such diseases may best be prevented.

SMALLPOX.—For some time past Edinburgh has been bombarded from the insecure distance of Leith and Dalkeith by this fell disorder. Instead of drawing a *cordon sanitaire* round the infected districts, and isolating the patients there as best might be, they have been admitted to our Infirmary and to another temporary hospital in the heart of our city. Amidst our floating population there are at all times a great number of unvaccinated, and a still greater number who, though vaccinated, are susceptible of the disease—for vaccination, though it greatly modifies, can never wholly prevent smallpox; and the result has been an outbreak of smallpox, which, though not by any means excessive, is yet sufficiently alarming; the deaths from smallpox in Edinburgh during November last having amounted to 31, or 6·3 per cent. of the deaths from all causes. Quite recently the authorities have obtained permission to use George Watson's Hospital, which is to form part of our new Infirmary, as a smallpox hospital; and there are at present within its precincts upwards of 130 cases, besides 30 still remaining in the Royal Infirmary. This building stands within its own grounds, is therefore completely isolated, and, as it contains ample accommodation for a much larger number of patients, we trust that an instant removal to it of all such patients will be followed by an abatement of the epidemic.

SIAMESE TWINS.—We take the following from the *Druggists' Circular*:—"The Siamese twins are among the most remarkable twins the world has latterly known. In the year 1100, Eliza and Mary Chalhurst were born in Kent, England, united twins. They lived in this condition thirty-four years, and then one died. It was proposed to cut them apart; but the survivor would not consent, and she was dead six hours after her partner. Two girls were born, fastened together, in Edinburgh, many years ago. The food one ate nourished the other; but often when one slept the other would be 'wide awake.' They lived seven years. In 1700, Helen and Judith were born at Presburg, Hungary, united back to back. They lived twenty-three years. Judith was always feeble, Helen always well and strong; yet they both died at the same moment. In 1856, two children were born united as Helen and Judith were. They are said to be living in Texas at this moment. They are entirely different in disposition and temperaments, and often have bitter quarrels. Lazarus and John Collorado, born at Genoa in 1617, lived many years. The attached and imperfectly-developed twin John hung *with his head downwards* from the lower part of the chest of Lazarus. This double monster married and had several children, who were perfectly and admirably developed. They all visited Scotland in 1642. At the court of James III. of Scotland there lived a man double above the waist and single below it. The two heads learned several languages, and often debated together. The two halves also often engaged in angry fisticuffs. This monster lived twenty-eight years. One of the bodies died several days before the other. Dr Boehm, a celebrated German surgeon, recently cut asunder two female children, aged five years, who were joined like the Siamese twins. One of the girls died on the day of the operation. The other was, at last accounts, alive, and in the best of health."

ROYAL COLLEGE OF PHYSICIANS.—The following office-bearers were elected at the annual meeting on St Andrew's day:—

President.—R. Paterson.

Council.—Robert B. Malcolm, Alexander Wood, A. H. Douglas, W. H. Lowe, J. Matthews Duncan, William R. Sanders.

Vice-President.—A. H. Douglas.

Examiners.—Charles Bell, Alexander Wood, A. Halliday Douglas, Robert Paterson, Thomas S. Wright, A. Keiller, T. H. Pattison, W. Cumming, J. Matthews Duncan, D. R. Haldane, G. W. Balfour, T. G. Stewart, J. Struthers, R. P. Ritchie, J. Linton, C. Muirhead, A. Macdonald, T. R. Fraser.

Treasurer.—Samuel Somerville.

Secretary.—D. R. Haldane.

Librarian.—W. Cumming.

Curator of Museum.—T. R. Fraser.

Registrar of Applicants for License.—D. R. Haldane.

ROYAL MEDICAL SOCIETY OF EDINBURGH.—The following gentlemen have been elected office-bearers of this Society for the Session 1871-72:—*Presidents.*—E. Willis Way, M.B.; Lewis Shapter, B.A. Cantab.; H. C. Martin M.B.; A. J. M. Bentley, M.B. *Hon. Secretaries.*—J. Burnley Walker; H. M. Church, B.Sc. *Curator of Library.*—A. C. E. Harris. *Curator of Museum.*—J. E. Shaw.

IT is proposed to issue quarterly, to subscribers only, a series of coloured photographs of skin diseases, with letterpress descriptions.

The subscription is to be one guinea annually, and the subscription-list is restricted to medical practitioners, registered medical students, medical book-clubs, charities, and societies. The photographs are to consist not of typical cases, but of such as are interesting from their infrequency or from some abnormality in their course: thus they will supplement and not merely repeat the illustrations of other similar works. The profits, if any, are to be devoted to the general purposes of the British Hospital for Diseases of the Skin, Great Marlborough Street, London, from whose patients the cases for illustration will be selected.

WE have received the following medical declaration respecting Alcohol:—As it is believed that the inconsiderate prescription of large quantities of alcoholic liquids by medical men for their patients has given rise, in many instances, to the formation of intemperate habits, the undersigned, while unable to abandon the use of alcohol in the treatment of certain cases of disease, are yet of opinion that no medical practitioner should prescribe it without a sense of grave responsibility. They believe that alcohol, in whatever form, should be prescribed with as much care as any powerful drug, and that the directions for its use should be so framed as not to be interpreted as a sanction for excess, or necessarily for the continuance of its use when the occasion is past. They are also of opinion that many people immensely exaggerate the value of alcohol as an article of diet, and since no class of men see so much of its ill effects, and possess such power to restrain its abuse, as members of their own profession, they hold that every medical practitioner is bound to exert his utmost influence to inculcate habits of great moderation in the use of alcoholic liquids. Being also firmly convinced that the great amount of drinking of alcoholic liquors among the working classes of this country is one of the greatest evils of the day, destroying, more than anything else, the health, happiness, and welfare of those classes, and neutralizing, to a large extent, the great industrial prosperity which Providence has placed within the reach of this nation, the undersigned would gladly support any wise legislation which would tend to restrict, within proper limits, the use of alcoholic beverages, and gradually introduce habits of temperance. Signed by Dr Burrows, President of the Royal College of Physicians; Mr Busk, President of the Royal College of Surgeons; Dr Paget, President of the General Council of Medical Education; and 251 of the most distinguished medical men of London and the provinces. We cordially concur with all the statements of this declaration, except the first; for we believe that, in Scotland at least, at no period during the last forty years has alcohol in all its various forms been more sparingly and considerately employed in all classes of disease than it now is. At the same time we appreciate the appropriateness of such a declaration emanating from London, where the precepts of the late Dr Todd gave so decided an impulse to the indiscriminate and inconsiderate employment of alcohol in the diseases of all classes.

THE COSTLINESS OF PREVENTIBLE DISEASES.—Some idea of the cost to the country of preventible disease may be gathered from a calculation in the *Times* of 12th Dec. of the actual cost of enteric (typhoid) fever during the last ten years, since the death of the Prince Consort. The data assumed are, on an average annual mortality of 20,000, a mortality of 1 in 6, a value of £100 for each life lost, and a cost of £12 per case in loss of labour and expense of maintenance. These data are manifestly conjectural, but they have a known basis of reality sufficient to entitle them to consideration as a rough measure, probably under the mark, of the extent of an evil we have hitherto tamely endured. And upon them is founded the calculation that, during the last ten years, the loss to the country from the unchecked spread of enteric fever has been not less than £34,000,000 sterling, or an average of upwards of three millions of pounds sterling per annum, besides an additional sum for interest. Surely, as Dr Acland has said, no measure could more redound to the glory of a government than one which would render such expensive and "senseless accidents" impossible alike in the houses of rich and poor. And the *Times* has made this practical suggestion, that every case of enteric fever should lead to a judicial inquiry into its causes, and any person or corporation found responsible by any act or default for its production should be liable in pecuniary damages to the sufferer or his representatives. There can be little doubt that some such enactment would at once lead to such watchfulness over architects, builders, and plumbers, as would speedily produce a marked sanitary reform. And we see no reason why railway companies should be amerced in heavy damages for accidents from defective material, while architects get off scot free for so-called accidents more harassing and painful in their nature, more expensive to the country, and no more to be regarded as "dispensations of Providence" than deaths following running a train with a cracked axle in its midst.

SURGEON-MAJOR FASSON, late of the Herbert Hospital, Woolwich, has been elected Superintendant of the Edinburgh Royal Infirmary.

PUBLICATIONS RECEIVED.

Dr Henry Adams,—Intermittent Malaise. London, 1871.

T. C. Allbutt, M.D.,—On the Use of the Ophthalmoscope. London, 1871.

William Allingham, F.R.C.S.,—Diseases of the Rectum. London, 1871.

Francis E. Anstie, M.D.,—Neuralgia. London, 1871.

William Henry Archer,—Index to Abstracts of Patents and Patentees in Victoria for 1869. Melbourne, 1871.

Lombe Atthill, M.D.,—Clinical Lectures on Diseases of Women. Dublin, 1871.

James Henry Bennet, M.D.,—On the Treatment of Pulmonary Consumption. London, 1871.

James L. Bryden, M.D.,—Vital Statistics of the Bengal Presidency, 1858 to 1869. Calcutta, 1871.

Dr Ezio Castoldi,—Sull' Alcoolismo Acuto. Milan, 1871.

Dr W. Chasseaud,—Mode d'Invasion et de Propagation du Choléra. Constantinople, 1871.

W. Cholmeley, M.D.,—Annual Oration delivered before the Medical Society of London. London, 1871.

W. R. Cornish, F.R.C.S.,—Cholera in Southern India in 1870. Madras, 1871.

William Curran,—Medical History of the Himalayas. Dublin, 1871.

Ephraim Cutter, M.D.,—Treatment of the Versions and Flexions of the Unimpregnated Uterus. Boston, 1871.

Dr H. Dagonet,—Des Impulsions dans la Folie, et de la Folie Impulsive. Paris, 1870.

Arthur Scott Donkin, M.D.,—Skim-Milk Treatment of Diabetes and Bright's Disease. London, 1871.

J. Matthews Duncan, M.D.,—Fecundity, Fertility, and Sterility, 2d edition. Edinburgh, 1871.

Edward A. Fitzgerald,—Epidemic Cholera. London, 1871.

J. Milner Fothergill, M.D.,—Digitalis, its Mode of Action and Use. London, 1871.

Dr F. Frédault,—Histoire de la Médecine. Paris, 1870.

Joseph Gamgee,—A Treatise on Horse-Shoeing and Lameness. London, 1871.

Sampson Gamgee,—On the Treatment of Fractures of the Limbs. London, 1871.

Wilson Fox, M.D.,—The Treatment of Hyperpyrexia. London, 1871.

Frederick James Gant, F.R.C.S.,—The Science and Practice of Surgery. London, 1871.

T. Henry Green, M.D.,—Introduction to Pathology and Morbid Anatomy. London, 1871.

Furneaux Jordan, F.R.C.S.,—On Clinical Education. London, 1871.

Charles Kidd, M.D.,—Hydrate of Chloral and Nitrous Oxide Gas as Anesthetics. Dublin, 1870.

Robert Liveing, M.D.,—Notes on the Treatment of Skin Diseases. London, 1871.

Liverpool Medical and Surgical Reports. London, 1871.

Z. C. McElroy, M.D.,—The Clinical Thermometer. New York, 1871.

Henry R. Madden, M.D.,—On the Relation of Therapeutics to Modern Physiology. London, 1871.

William Marsden, M.D.,—Asiatic Cholera. London, 1871.

Henry A. Nicholson, M.D.,—Manual of Zoology, 2d edition. Edinburgh, 1871.

Florence Nightingale,—Introductory Notes on Lying-in Institutions. London, 1871.

Hariette Noel-Thatcher,—The Fascinator: A Prize Essay on the Use of Tobacco. London, 1871.

Nouveau Dictionnaire de Médecine et de Chirurgie Pratiques, vols. xiii., xiv. Paris, 1870–71.

William Miller Ord, M.B.,—Notes on Comparative Anatomy. London, 1871.

Drs Parkes and Sanderson,—Reports on the Sanitary Condition of Liverpool. Liverpool, 1871.

Alfred Pullar, M.D.,—Neumann's Text-Book of Skin Diseases. London, 1871.

Recueil des Travaux de la Société Médicale d'Observation de Paris. Paris, 1868–70.

Report on Spiritualism of the London Dialectical Society's Committee. London, 1871.

J. Russell Reynolds, M.D.,—Lectures on the Clinical Uses of Electricity. London, 1871.

Sydney Ringer, M.D.,—Handbook of Therapeutics. London, 1871.

A. Ruppaner, M.D.,—Contributions to Practical Laryngoscopy. New York, 1871.

Golaub Sing, M.D.,—Hindu View of Cholera. London, 1871.

Sir James Y. Simpson, Bart.,—Anæsthesia, Hospitalism, etc.,—Edinburgh, 1871.

David Smith, M.D.,—Preservation of Sight. London, 1871.

T. Grainger Stewart, M.D.,—Bright's Diseases of the Kidneys. Edinburgh, 1871.

Transactions of the American Otological Society, 1871. Boston, 1871.

Transactions of the Clinical Society of London. London, 1871.

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A. Trousseau,—Lectures on Clinical Medicine, vol. iv. London, 1871.

Sir Thomas Watson, Bart., M.D.,—Lectures on the Principles and Practice of Physic. London, 1871.

C. J. B. Williams, M.D., and C. T. Williams, M.D.,—Pulmonary Consumption. London, 1871.

Chauncey Wright,—Darwinism. London, 1871.

Part First.

ORIGINAL COMMUNICATIONS.

ARTICLE I.—*Some of the Medico-Legal Relations of Insanity to Will-making.* By ARTHUR MITCHELL, M.D., F.R.S.E., Commissioner in Lunacy for Scotland, etc.

THE medico-legal relations of insanity to will-making form the subject of this paper. It will assist me if I introduce the subject by endeavouring very briefly to show who the insane are *legally.*

In a certain sense, every person who is detained in an asylum may be said to be legally insane. For the purposes of the Lunacy Acts, the law declares a lunatic to be *a person certified to be a lunatic by two medical men.* On these certificates the sheriff grants his order or warrant to receive the person into an asylum, and to detain him there as a lunatic. The sheriff is not required to sit in judgment on the sufficiency of the facts on which the certificates rest. If there is no error in their form, he may grant his order as a matter of course. In actual practice he generally does this.

When, therefore, the law is asked to declare a man insane for the purpose of providing for his care and treatment, it does so on moderate evidence of insanity, though the step does involve a loss of liberty—the *sequestration,* if not the *incarceration,* of the patient. The law professes to guard with jealousy the personal liberty of the subject, but in the case of a lunatic it has been thought right not to surround his reception into an asylum with too many legal difficulties, because the step is understood to be taken alike for his own benefit, and the convenience or safety of society.

It thus appears that to get a man declared legally insane, for the purposes of care and treatment, is not a very cumbrous or difficult procedure.

Nor does the law always insist on very weighty and conclusive evidence of insanity, when the result and object of declaring a man insane is to confer on him civil disability. For instance, there is seldom great difficulty in obtaining the appointment of a *curator bonis.*

When we reach crime, however, and when freedom from responsibility results from declaring a man legally insane, the law is decidedly more difficult to satisfy.

To take away a man's personal freedom in order to provide for his care and treatment; to deprive him of the management of his property; to upset his last will and testament,—though certainly important things, are not of such importance, in the eye of the law, as to hold a man irresponsible for criminal acts. Consequently a clearer and fuller evidence of insanity is required to establish this freedom from responsibility.

Each of these results is based on the *existence* of insanity, but for each of them *a different degree or kind of insanity* is required.

The law says:—"Your reason is too much impaired or deranged to manage your property; you are unable to distinguish between those measures which would conduce to your profit and such as would lead to your ruin; you are insane in short, and therefore the law will take the control of your property and the disposal of your person. But if, under the same insane state of mind which renders this proper, you are led to kill your neighbour, it is quite possible that you may be assumed to have acted under the guidance of sound reason; and it may be found that such a state of mind, as properly and legally deprives you of your personal freedom, and of the management of your affairs, does not discharge you from responsibility for the death of a neighbour at your hands."[1]

In other words—and this is what I wish to bring out—the law requires different insanities, or different degrees of insanity, according to the importance or nature of the issues which would follow the declaration of insanity. Even in criminal cases, the plea of insanity is practically accepted more readily, when a crime against property is being dealt with, than when it is a crime against the person.

All through the law, in fact, there is reference made to the degree of mental disease—deeper signs of disease being required in some circumstances than are required in others. This was openly embodied in the verdict of the jury, in *ex parte* Cranmer, which ran thus:—"*So far* debilitated in his mind, *as to be* incapable of the management of his affairs." It was with reference to this verdict that Erskine asked—"How am I to tell what is *so far* debilitated in his mind that he is not equal to the management of his affairs?" But this is just what the law practically, though often unconsciously, affects to tell in questions which relate to the declaration of insanity. It declares that a man may be *so far insane* as to justify his detention in an asylum, or *so far insane* as to require a *curator bonis*, or *so far insane* as to make void his will, or *so far insane* as to free him from responsibility. I believe that every one who has studied the numerous decisions in cases in which the question of insanity has been raised, will have seen that there is throughout them, taken as a whole, the recognition of the need of a small, a

[1] Rae.

great, and a greater insanity, according to the nature of the results which are to follow its declaration.

A woman, for instance, whose mental state is really one of imbecility, is quite easily certified to be a lunatic, and placed under legal warrant in an asylum. Being a lunatic, the law holds in a general way that she cannot give consent, and that connexion with her would therefore be rape. But, when the connexion occurs, and her mental state is more carefully looked into, there is every probability that it will then be found that she is not *so far* debilitated in mind, as to be unable to give consent *in such a matter*, and that no crime has been committed, if she has offered no resistance, which under ordinary excitements and temptations such a patient is not likely to have done. She cannot leave the asylum though she may wish to do so; in the matter of staying or going she has lost her rights of consent, though she can still legally consent to sexual intercourse when she has the inclination and opportunity.

I ask now—Is this an altogether unreasonable view which is taken by the law? Is there not some principle of justice and common sense underlying it? Are there not in fact different kinds and degrees of mental disorder? Is it not as much a medical as a legal opinion, that insanity under every circumstance ought not to annul a person's criminal or civil liabilities?

I do not stop to inquire whether it be a logical conclusion from this that insanity may be pled as a ground for mitigation of punishment, quite as correctly as for total irresponsibility, but I pass at once to the consideration of the question which more immediately concerns us,—What are the particular degrees and forms of insanity which render a man's will invalid? What, in other words, are the legal relations of insanity to will-making?

I shall first, however, lay before you the principles on which a man is held to have a right to regulate the disposal of his property after his death, because it is clear that the nature of this right must influence us when, for any reason, we are asked to disregard it. In other words, it may be a right which we disregard with ease or with difficulty. I do not think that I can disclose these principles more briefly or clearly, than in the words used by Chief Justice Cockburn in his decision of the case Banks *v.* Goodfellow. "The law of every civilized people," he says, "concedes to the owner of property the right of determining by his last will, either in whole or in part, to whom the effects which he leaves behind him shall pass. Yet it is clear that, though the law leaves to the owner of property absolute freedom in this ultimate disposition of that of which he is thus enabled to dispose, a moral responsibility of no ordinary importance attaches to the exercise of the right thus given. The instincts and affections of mankind, in the vast majority of instances, will lead men to make provision for those who are the nearest to them in kindred, and who in life have been the objects of their affection. Independently of any law, a man, on the point of leaving the world, would *naturally* distribute among his children or nearest relatives the property which he possessed. The same motives will influence him in the exercise of the right which the law secures to him. Hence arises a reasonable and well-warranted expectation, on the part of a man's kindred surviving him, that on his death his effects shall become theirs instead of being given to strangers. To disappoint the expectation thus created, and to disregard the claims of kindred to the inheritance, is to shock the common sentiment of mankind, and to violate what all men concur in deeming an obligation of the moral law. It cannot be supposed that, in giving the power of testamentary disposition, the law has been framed in disregard of these considerations. On the contrary, had they stood alone, it is probable that the power of testamentary disposition would have been withheld, and that the disposition of property after the owner's death would have been uniformly regulated by the law itself. But there are other considerations which turn the scale in favour of the testamentary power. Among those who, as a man's nearest relatives, would be entitled to share the fortune he leaves behind, some may be better provided for than others; some may be more deserving than others; some, from age, sex, or physical infirmity, may stand in greater need of assistance. Friendship and tried attachment, or faithful service, may have claims that ought not to be disregarded. In the power of rewarding dutiful and meritorious conduct, paternal authority finds a useful auxiliary; and age secures the respect and attention which are one of its chief consolations. As was truly said by Kent C. in *Van Alst.* v. *Hunter*, 5 Johnson N. Y. Chan. Rep. 159, 'It is one of the painful consequences of extreme old age that it ceases to excite interest, and is apt to be left solitary and neglected. The control, which the law still gives to a man over the disposal of his property, is one of the most efficient means which he has in protracted life to command the attention due to his infirmities.' For these reasons the power of disposing of property in anticipation of death has ever been regarded as one of the most valuable of the rights incidental to property, and there can be no doubt that it operates as a useful incentive to industry in the acquisition of wealth, and to thrift and frugality in the enjoyment of it. The law of every country has, therefore, conceded to the owner of property the right of disposing by will either of the whole, or, at all events, of a portion of that which he possesses. The Roman law, and that of the Continental nations which have followed it, have secured to the relatives of a deceased person, in the ascending and descending line, a fixed portion of the inheritance. The English law leaves everything to the unfettered discretion of the testator, on the principle that, though in some instances caprice, or passion, or the power of new ties, or artful contrivance, or sinister influence, may lead to the neglect of claims that ought to be attended to; yet the instincts, affections, and common sentiments of mankind may be safely trusted to secure on the whole a better disposition of the property of the dead, and one more accurately adjusted to the requirements of each particular case, than could be obtained through a distribution prescribed by the stereotyped and inflexible rules of a general law."[1]

This I think may be accepted as the correct embodiment of the views by which the law of England is guided in conferring the testamentary power.

The law of Scotland rests on the same principle, though in it the restrictions placed on the testator's powers are more numerous and more comprehensive—wives and children having claims which cannot be overlooked, and which rank as debts due by the estate of the dead husband or father.

It is not necessary to point out the differences in the restrictions which have been placed by different laws on the testator's powers, because the law, in securing those powers, whatever their measure be, has been guided by the same principles. The legal claims on the owners of property during their lifetime may differ in different countries, yet the rights of ownership may remain in their essence the same. So the restrictions on the testamentary power may vary; and yet, so far as it extends, it may nevertheless be founded on the same principles.

The law *might* have given no such power. It might have enacted that, after a man's death, his whole property shall always be disposed of in certain fixed ways, without regard to any wishes he entertained during his life. It does this, in fact, if he has not left an expression of those wishes in a certain way. It goes even further, and puts restraints on his disposing power in certain directions and under certain circumstances. But in a general sense it leaves a man free to make arrangements for the disposal of a part or the whole of his property after death; and it gives this testamentary power, because it is believed that, *on the whole*, a more just disposal of the property will be attained in this way, than by any stereotyped distribution which could be invented and prescribed by law. It proceeds on a knowledge of human nature, and thinks that in this matter it may, as the rule, be properly trusted; that the obligations of consanguinity and the ties of affection will assert themselves; that it is not undesirable that there should be a power both of acknowledging kindnesses, and of abstaining from the reward of neglect; that this proves a stimulus to the acquisition of property, and in that way to thrift and orderly living; and, lastly, that it tends to secure for old age that kindness and care of which it often stands in need. Human nature, in this view of it, is credited with low as well as with high motives; and perhaps prudently and properly so, in a calculation of the average product of average character. But *all* the considerations which have given shape to the law in this matter are not related to selfishness. Most of them, indeed, acknowledge in man's nature the existence of something which gives nobility to it; and it is felt that it will, in the main, be for the good of society that this should be allowed to operate without burdensome restrictions; and that the wishes a man has expressed in life, with regard to the disposal of his property after death, should, if possible, be carried into effect. There is indeed a sort of sacredness about such wishes, and a feeling that trifles should not prevent their being implemented. This feeling extends to the law; and, accordingly, the upsetting of a will usually gives trouble. In short, the right of a man to dictate the disposal of his property after death, is one which the law holds in respect, as being based on something deeper than mere law.

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[1] Banks *v.* Goodfellow. Judgment of Chief Justice Cockburn (Blackburn, Mellor, and Hannen, JJ., concurring), Law Times of 13th Aug. 1870.

It is of importance to understand this, and not to lose sight of it in discussing those things which do, or which should annul this right—a right which we have seen to be rather secured than conferred by the law. It is this attitude of the law with regard to it, which explains why a will cannot be broken on frivolous pretences—why, on the contrary, the grounds on which it can be upset must be clear and sufficient.

Now, one of the grounds on which a testament may be declared void, is the *insanity* of the testator; and it is with this ground alone that we have to do. If reference is made to any others, it will only be in the way of illustration.

"It is obvious," as Sir Alexander Cockburn says, "that to the due exercise of a power involving a moral responsibility thus grave, the possession of the intellectual and moral faculties common to our nature should be insisted on as an indispensable condition."[1]

But what are the moral and intellectual faculties common to our nature?

I think it was Sir John Nicholl who said that the rule of law in this matter was the rule of common sense; and, as evidence of this, that competency of mind was to be judged of by the nature of the act to be done, and from a consideration of all the circumstances of the case. This of course implies that minds may be competent to do some things, and not competent to do others.

And we have thus a relational sanity, so that the same man may be both sane and not sane—competent for one act, and incompetent for another. In point of fact, many of the best decisions really rest on this view.

On the other hand, many attempts have been made to define with precision the nature of this competency, and to show exactly in what it consists. For instance, it is said to be, "*judgment to dis-*

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[1] Banks *v.* Goodfellow.

cern with perfect memory,"[1] or "*a disposing memory so as to be able to make a disposition with understanding and reason.*"[2] Of course when we say that a man has "*a sound disposing memory and understanding*," we have named the kind of memory and understanding which gives competency to make a will; but we have simply given it a name, and have not told what sort of memory and understanding this *disposing* sort is. As often happens when we are dealing with mental phenomena, we get over a difficulty by the help of words, and persuade ourselves that we have said something precise and useful, and have given information, when we have really done nothing but hide the difficulty in a bunch of letters. A *disposing* memory and understanding does not describe any condition of mind, till we have defined the meaning of the adjective *disposing*, which would be an extremely difficult thing to do satisfactorily. It would be impossible to give a definition which would not limp somewhere. The fact is, it is quite as difficult a task to define sanity as to define insanity. The one passes into the other by every conceivable degree. The sane are not separated from the insane by a line, but by a territory. And the thousands who people that territory are in the uncomfortable position of neutrals. According to circumstances they are thought to be leaning to one side or to the other—to sanity or to insanity. Out of this territory comes all our trouble in courts of law—both in questions of irresponsibility for crime, and of civil disability. About those fairly beyond the territory, on either side, there are no disputings. But with reference to the rest, our definitions of sanity and insanity must be now inclusive and now exclusive, in order to satisfy what we believe to be either justice or public convenience. There can be nothing more vexing than definitions which thus fluctuate according to circumstances.

It would be a mistake, however, to suppose that either lawyers or doctors originate this fluctuation. It is the necessary product of the actual state of the case. In other words, it has a real existence. For an oscillating class we cannot help having oscillating definitions; and medical men should remember this when they feel tempted to say hard things of some learned pleadings or judicial deliverances; while lawyers, in their turn, should remember it also, when the opinions of medical men are thought to look like crotchets.

Attempts have been made, however, to get over the difficulty of giving a meaning to the word *disposing*, when so used. I shall give one—that of the Court in the case of Banks *versus* Goodfellow, in many respects the most important decision which has recently, or perhaps has ever been given in a dispute as to the validity of a will on the ground of the testator's insanity. It is valuable for many reasons, and among others because it attempts an answer to the question, What are the intellectual and moral qualities common to our nature, which must be possessed by every testator? According to that decision, "It is essential to the exercise of the power (of willing away property), that the testator shall understand the nature of the act and its effects; shall understand the extent of the property of which he is disposing; shall be able to comprehend and appreciate the claims to which he ought to give effect; and, with a view to the latter object, that no disorder of the mind shall poison his affections or prevent the exercise of his natural faculties, that no insane delusion shall influence his will in disposing of his property, and bring about a disposal of it which would not have been made otherwise."[1]

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[1] Shelford, Law of Lunacy, p. 274.

[2] Shelford, op. cit., p. 275.

It is added, "We have here the measure of the degree of mental power which should be insisted on."

Now, this *measure of a degree* amounts to this:—The testator must understand what he is about; what property he has to leave, and what persons have claims on him. But this mark of sanity is not enough. He must not only be to this extent sane, but he must also not be insane in certain directions. He must not, for instance, be the subject of such an insanity as would prevent the free exercise of his affections, or of an insanity with such a delusion as would have an influence on him in the matter of his testament.

"If the human instincts," the Chief Justice goes on to argue in his decision,—"if the human instincts and affections or the moral sense be perverted by mental disease; if insane suspicion or aversion take the place of natural affection; if reason and judgment be lost, and the mind become a prey to insane delusions calculated to interfere with and disturb its functions, and to lead to a testamentary disposition due only to its baneful influence,—in such a case it is obvious that the condition of testamentary power fails, and that a will made under such circumstances ought not to stand."[2]

So much for what the law regards as mental *competency* in a testator. In consists in the possession of something and the absence of something—the possession of certain signs of sanity, and the absence of certain signs of insanity.

Before discussing the mental states which lead to *incompetency*, I must be allowed to make one short digression.

I am desirous to point out that in all medico-legal questions, but especially I think in those which relate to wills, we deal with the signs or symptoms of insanity rather than with mental diseases. Thus, *what a delusion relates to*, may, in the settlement of the question, be practically of more importance than the mere existence of a delusion. It may also be of importance to show in what parts of the mind the signs of disease are apparent, and how conduct might thus be affected. Even of a general paralytic, the mental phenomena—the mental sign of the disease—must be detailed.

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[1] Banks *v.* Goodfellow.

[2] Ibid.

It will not be enough to say that he was a general paralytic. Indeed, it is because of its signs or symptoms that insanity *is* a disease which so often appears in courts of law, and the signs are there dealt with as the disease.

I proceed now to speak of those mental states which render a man legally incompetent to make a will.

In a general sense, then, all insane persons are incompetent, and the existence of mental disease in this general sense involves the loss of testamentary capacity. When the mental faculties are *deeply* and *widely* involved in disorder, there is an inability to act rationally. Persons so affected cannot form and cannot express wishes, regarding the disposal of their property, which are entitled to attention. They have not a correct knowledge of what their property is; they do not know who those persons are whose claims should be weighed; and they are incapable of deliberation. These persons labour under a *general* insanity of the mind; and if disputings ever arise about such cases they are generally settled without difficulty. The facts being proved, all are agreed as to what should be their effect.

It would serve no good purpose, therefore, to occupy time by a description of these states of mind, which clearly, and by common consent, involve a loss of testamentary rights.

There are, however, other states of mental insanity about which differences of opinion may and do exist. That is, it is not certain whether they should or should not cause a loss of the testamentary power. In these states the signs of mental disorder seem either to be confined to certain faculties, or to disappear temporarily, or to show themselves feebly. These are the states which usually give rise to difficulty and to difference of opinion. It is not certain whether in them testamentary capacity remains or is destroyed. There is not, in short, a general agreement as to their effect, and rules for their settlement are not easily laid down.

It is about such states, therefore, that we think it will be most useful to speak, and accordingly we shall discuss, *first*—

The bearings of what is called partial insanity on the testamentary capacity. The term partial insanity, as used here, has not the meaning given to it by some writers, but simply refers to states in which the mind seems to disclose its insanity in one direction or on one point, while it appears to act normally and healthfully in other directions.

We shall examine, *secondly*, the bearings of what are called lucid intervals on will-making, and endeavour to explain the origin of the difficulties which surround this subject.

The *third* point we shall take up is the influence of a general weakness of mental power on the testamentary capacity. It is clear that this must give rise to much disputing, since there are all degrees of mental power among men, just as there are all degrees of bodily power. On every step of the ladder, from an idiot up to Newton, there stands a man. At which step of the ladder does testamentary capacity end or begin?

We shall, accordingly, first examine the bearings of partial insanity on testamentary capacity.

Lord Hale says there is a total insanity and a partial insanity of mind—*quoad hoc vel illud insanire, et quoad omnia insanire.* The doctrine is applicable to civil cases generally, but to will cases more than to any others.

In the endeavour to show what is meant by it, perhaps I cannot do better than begin with the narration of a case. I choose one which is interesting in several respects:—

" Mr Simon Browne, a dissenting teacher, of exemplary life and eminent intellectual abilities, after having been some time seized with melancholy, desisted from the duties of his function, and could not be persuaded to join in any act of worship, either public or private. His friends often urged him to account for this change in his conduct, at which they expressed the utmost grief and astonishment; and, after much importunity, he told them 'that he had fallen under the sensible displeasure of God, who had caused his rational soul gradually to perish, and left him only an animal life in common with the brutes; that it was, therefore, profane for him to pray, and incongruous to be present at the prayers of others.' "

He believed that this calamity had overtaken him "in consequence of having accidentally taken away the life of a highwayman, although it was done in the act of resistance to threatened violence, and in protection of his own person. Whilst kneeling upon the wretch, whom he had succeeded in throwing on the ground, he suddenly discovered that his prostrate enemy was deprived of life. This most unexpected circumstance produced so violent an impression upon his nervous system that he was overpowered by the idea of even involuntary homicide; and for this imaginary crime fancied himself ever after condemned to one of the most dreadful punishments that could be inflicted upon a human being."

Grief, occasioned by the death of his wife and only son, with a consequent derangement of his bodily health, predisposed him to be thus injuriously influenced by what would have done no injury to most men, and none to him, in ordinary circumstances.

He continued for eleven years—or to the end of his life—inflexible in the opinion that the Supreme Being had "annihilated in him the thinking substance, and utterly divested him of consciousness; that though he retained the human shape, and the faculty of speaking in a manner that appeared to others rational, he had all the while no more notion of what he said than a parrot."

With reference to this strange belief, Dr Aiken observes that, "of all the recorded delusions to which the human mind is subject, none perhaps is more remarkable than this, which, apparently, could not be put into a form of words for description without demonstratively proving its fallacy."

Being once importuned to say grace at the table of a friend, Browne excused himself many times; but the request being still repeated, and the company kept standing, he discovered evident tokens of distress, and, after some irresolute gestures and hesitation, expressed with great fervour this ejaculation—"Most merciful and Almighty God, let Thy spirit, which moved upon the face of the waters when there was no light, descend upon me, that from this darkness there may rise up *a man* to praise Thee."

During all this time the intellectual powers of his mind subsisted in their full vigour—his conceptions were clear and his reasoning strong. His affections also were healthy and active, and in the affairs of life he conducted himself prudently.

But the most astonishing proof of his intellectual integrity or excellence during this period is "A Defence of the Religion of Nature and the Christian Revelation," which he then wrote in reply to Tyndal's "Christianity as Old as the Creation." This book is universally allowed to be the best which that controversy produced, and it is a standard work still. He dedicated it to Queen Caroline; and in that dedication he disclosed his delusion, though there is no trace of it whatever in the work itself, which I have read.

His friends found means to suppress the dedication, "wisely considering that a book, to which it should be prefixed, would certainly be condemned without examination;" but, fortunately, the document itself was preserved, and fell eventually into the hands of Dr Hawksworth. Though it reveals his delusion and the power it had over him, it is still nowhere feeble. He speaks of himself as "a being such as history cannot parallel," and prays her Majesty, "in her most retired address to the King of kings," to make it her devout request that her reign might be made renowned to all posterity "by the recovery of a soul now in the utmost ruin." Newton brought the case under Cowper's notice in the hope of doing him good, and this elicited from Cowper a short letter, which is a good lesson to the student of insanity.

Browne was born in 1680; he became ill in 1723, and he died in 1732. During this long illness, having no charge, he had much leisure, and he wrote not only the learned book I have mentioned, but his scarcely less learned or less celebrated "Answer to Woolston's Discourse on the Miracles of our Saviour." He also wrote a "Disquisition on the Trinity," and compiled a Greek and Latin Dictionary. In none of these can a vestige of his insanity be anywhere detected. I possess a copy of his reply to Tyndal, on the fly-leaf of which there is a note on Browne's case in the handwriting of Porson. This gave an interest to his case, which led to some little research, of which the narrative I now conclude is the result.[1]

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[1] This account of Simon Browne is taken from "The Adventurer," "The Gentleman's Magazine," "Arnold's Insanity," "Southey's Life of Cowper,"

We have here, then, a man who was most manifestly insane; he had a strongly-marked and fixed delusion; in certain circumstances it ruled his conduct; it utterly disqualified him for holding his office; it changed the whole current of his life. It did all this, and yet left him able to write learned and argumentative treatises and to compile a dictionary, to exercise his natural affections in a healthy manner, and to act rationally in the ordinary affairs of life.

This is what is understood here by partial insanity; and the question with us now is, Whether a person in this or in a similar state can make a valid will—whether medical science and law are agreed as to this?

"What," it is asked, "if the mind, though possessing sufficient power undisturbed by phrenzy or delusion, to take into account all the considerations necessary to the proper making of a will, and producing a rational and proper will, should be subject to some delusion, but a delusion which neither exercises, nor is calculated to exercise, any influence on the particular disposition? Ought we in such case to deny to the testator the capacity to dispose of his property by will? It must be borne in mind that the absolute and uncontrolled power of testamentary disposition conceded by the law, is founded (*as we have shown*) on the assumption that a rational will is a better disposition (*on the average*) than any that can be made by (*an inflexible rule of*) the law itself. If, therefore, though mental disease (*or insanity*) may exist, it presents itself in such a degree and form as not to interfere with the capacity to make a rational disposition of property, why, it may well be asked, should it be held to take away the right? It cannot be the object of the legislator to aggravate an affliction, in itself so great, by the deprivation of a right, the value of which is universally felt and acknowledged. If it be conceded, as we think it must be, that the only legitimate or rational ground for denying testamentary capacity to persons of unsound mind is the inability to take into account, and give due effect to, the considerations which ought to be present in the mind of a testator in making his will, and influence his decision as to the disposal of his property, it follows that a degree or form of unsoundness which neither disturbs the exercise of the faculties necessary for such an act, nor is capable of influencing the result, ought not to take away the power of making a will, or place a person so circumstanced in a less advantageous position than others with regard to his rights." [1]

These principles, laid down by Chief Justice Cockburn, have guided the best decisions of the law in this question.

But we are still left to ask whether there is *in fact*—in medical experience, that is—a partial insanity of the mind which really

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"Reid on Nervous Affections," "Aikin's Biog. Dict.," "Allibone's Dict. of English Literature," etc.

[1] Banks *v.* Goodfellow.—Law Times, 13th Aug. 1870, p. 817.

leaves it free to act rationally in certain directions. Is not the mind of man an harmonious unity, which cannot be faulty here and sound there? Can we dismember the mind? May it not be said that in our psychical organization there is nothing partial—nothing fragmentary—and that between the different faculties there exists a principle of succession and *anastomosis*, which entirely prevents their detachment and isolation, so that when a part falls the whole must fall?[1]

These questions are not to be answered metaphysically. They are practical questions, and the answers must be arrived at by ordinary practical methods. We cannot, from the depths of inner consciousness, evolve solutions which will be satisfactory. We must go into the world and among men, and see what actually happens both among the sane and among the insane. The most ingenious *theories* are of no value. If the thing is so, it is so, and we must accept it, whatever reasons may be assigned for thinking otherwise. We must test the facts by the usual methods; and, if they stand the test, as practical men we have no alternative—we must travel the road they indicate.

First, then, among sane men,—what do we find there—what mental states do they exhibit to help us? We shall accept as sane those who are generally accepted as sane by the world—those who enjoy the social rights and privileges of sanity. Medico-legally this is clearly what we are required to do. From a purely medical point of view we might properly go further and refine more than we do, or ought to do, in a medico-legal view.

Do we not, then, find that some sane men are above other sane men in certain intellectual qualities? Are not striking contrasts exhibited among the sane in the exercise and energy of different faculties of the mind?[2] I refer to something more than a mere difference of general mental power. I refer rather to differences in the different faculties. May not some of these be strong in one man and weak in another, while there is little difference as regards the rest? Have we not seen a marvellous memory with a pitiable want of good sense and judgment? Have we not seen a wealth of imagination with a poverty of will—with facility, that is? Have we not seen a powerful intellect with a weak morality?[3] In short, is it not a matter of everyday experience, that men are neither equally, nor alike, sane; and that some men are admirably fitted to fill certain positions, and to do certain acts, in whom we should have little confidence in other positions and in doing other acts? I am speaking here of *sane* men, and it follows therefore that there is a mental sanity which is not equally complete in all its parts—that as regards the health of the mind its various faculties exhibit different degrees of health, even when, to the faculties as a whole, it may be quite proper to apply the term sanity.

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[1] See Legrand du Saulle, La Folie devant les Tribunaux. Paris, 1840.

[2] Ibid., op. cit.

[3] Ibid., op. cit.

Go a little further and come to the eccentricities, whims, oddities, and tricks of manner of the sane, and we find among them, far from unfrequently, fixed ideas, not obtrusive and not annoying to others, which we note as amusing and do not treat seriously, and which never raise a doubt as to the sanity of those in whom they occur; but which nevertheless are phenomena differing scientifically only in degree, and not in kind, from an insane delusion. It would be an illustration of this if we met a man who refused to let his right foot enter or leave a room before his left, and who was so under the sway of this trick that if by chance he made the mistake he would feel uneasy till he had retraced his steps to remedy it. I abstain from giving further illustrations of these fixed eccentricities, because they are so abundant that I might hit on one, allusion to which would disturb the comfort of some reader.

Go further still, and we reach phenomena—peculiarities of mental action—which we hear commonly spoken of as *almost like* insane delusions, and among the friends of the subject of them it is whispered that he must take care and not let them go too far—that he should try to exercise a control over them, and keep them out of sight—yet, away from this, the man is still felt to be what other sane men are. He is not considered insane even in that respect, though there may be some uneasiness in trusting him where the phenomena in question might be supposed to have an influence, and though such peculiarities may utterly disqualify him for many occupations, leaving him able, however, to fill others with much usefulness. All this is matter of common experience.

But let us go a step further still, and we find divergences from the average state in particular directions, which are so pronounced that we unconsciously find ourselves regarding them as states of mental unsoundness. And thus we get to what is called partial insanity—we reach states, in fact, which are more or less like that exhibited in the case of Simon Browne. Medical men perhaps see these more closely than other men—being admitted into a knowledge of them from which others are excluded. But no observing man can have failed to note cases in which the disorder of the mind seemed to show itself in one special direction, leaving the other faculties apparently without disorder. That in medical opinion the faculties of the mind can become separately enfeebled or deranged, is almost proved by the many proposals which have been made to classify mental diseases according to the mental faculties which are involved. The intellect, the emotions, the propensities, and volition are recognised in medicine as capable of exhibiting disorder more or less separately; and still further, where the emotions or propensities are involved, it is never held that *all* the emotions or propensities are equally involved.

In states of sanity and of insanity, therefore, we have seen that we may have unequal degrees of health in the different mental faculties. Instead of saying unequal degrees of health, we have only to say unequal degrees of want of health, to find ourselves landed in the doctrine of partial insanity.

Medical analogies would have led us to anticipate the truth of such a doctrine. But we do not rest it on these analogies, nor on any sort of *a priori* reasoning, but on what is actually seen to occur.

In this view of the matter, I believe, I have the highest authorities with me. Legrand du Saulle says, " that an insane person is not of necessity *entirely absorbed* in his insanity, and a certain number of his actions may bear the stamp of reason and free will." " I believe," he says elsewhere, " that insanity is sometimes so circumscribed, and that the understanding is so free in all other respects, that the patient appears in his right mind, so long as his attention is not directed to the point on which he errs." Royer Collard says, " it is a great error to believe that a lunatic is incapable of performing certain acts, which require the concourse of the intellectual faculties." Delasiauve says, " that a patient may be at fault on one point, and may preserve the exercise of a correct reason on others."

Feuchtersleben states his opinion very strongly. " During the predominance of one fixed idea," he says, " the understanding may be pronounced, in every other respect except as relates to this one idea, healthy, the will free, and the act imputable."

Similar opinions are held by Hoffbauer, Pinel, Verdier, Casper, Castlenau, etc.

Indeed, as Belloc has well stated, these opinions are practically acted on in the government of every asylum—" Is not all our influence," he asks,—" is not all our action based on the capacity of the lunatic to understand the advice and reproofs which are given to him, and to direct his conduct accordingly? In other words, do we not treat the majority of patients not as wholly but partially insane?"

What we have now to do is, to apply this doctrine to the making of wills.

The testators, of whom we are at present speaking, are not held to be sane—they are, on the contrary, admittedly insane; but it is held that, though insane, they are still capable of doing certain things in a sufficiently rational manner, to make it fair to them, and not injurious to society, that these acts should be held as valid. Among these things is the making of a will. This is one of the certain things which some of the partially insane are held to be able to do in a valid manner. To what extent this is correct, we have still to show.

In reading over the decisions in will cases, it will be found that many judges have been careful to point out that much mere power of mind is not required in a testator. In Harrison *v.* Rowan,[1] for instance, it is stated that "it is not necessary that the testator should view his will with the eye of a lawyer, and comprehend its provisions in their legal form." "His capacity may be perfect to dispose of his property by will, and yet very inadequate to the management of other business." The law is laid down in the same way in Den *v.* Vancleve, where it is further stated, that it is not necessary that a testator should possess his faculties "*in as great a degree as he may have formerly done.*" They may have been weakened, or "*impaired by age or disease.*"[2]

It is of great importance to bear this in mind, because if it were held that high powers of mind were needed in a testator, an exceedingly small number of the partially insane could be regarded as competent; and this for two reasons,—first, though many great minds come under the dominion of fixed delusions, still a large proportion of the partially insane, as is true of all the insane, are drawn from those who are not originally of great mental power; and, secondly, because in a very considerable number of cases the occurrence of fixed delusions is accompanied with, or leads to, some general impairment of mental power, which, indeed, is often the result of the very conditions that led to the establishment of the delusion. Of few cases, indeed, of partial insanity, can it be safely asserted that the seemingly unaffected powers are really and entirely unaffected and unimpaired.

So much for this consideration. There is another of still greater importance. When the provisions of the will are coloured by the delusion all seem to agree, lawyers and doctors both, that it should not stand. And this leads to the remark, that even in cases in which the signs of insanity seem clearly to take one direction and to refer to one subject, we should avoid setting strict limitations either to itself, or to its influence over the other faculties. We do not require to set such limitations in order to show that testamentary capacity may exist. But it will probably be just and right *in every case* to set aside a will in which a fixed delusion has shown itself in the testator, and has been followed either by a bizarre and nonsensical will, or has led to provisions which are unfair to kith and kindred, and which ignore the ties of affection and consanguinity. Property entails duties and obligations as well as confers rights and privileges. And if we leave with some of the partially insane their rights in finally disposing of it, it is because we believe that some of them are capable of remembering and acting on their obligations in a reasonable manner. But we do not leave the right with all the partially insane. Each case has to be considered on its merits. Either great oddity or unfairness in the wills of such persons, though the prominent delusion or delusions may not be disclosed in them, should always be held as very damaging to testamentary capacity; while, on the other hand, the fact that a will is rational in its provisions, should go a very long way to establish competency where the insanity appears to have been only partial.

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[1] Law Times of 13th Aug. 1870, p. 818.

[2] Ibid.

If the delusion or fixed idea is actually seen in the provisions of the will and has influenced them, this should be conclusive as to the testator's incompetency.

The subject will be taken up at this point in the next paper.

ARTICLE II.—*On the Stability and Health, the Ovulation and Granulation of the Organism, and the Degeneration of Tissue.* By Dr J. G. MACVICAR, Moffat, N.B.

OUR life, considered as *passive*, consists in the motions which are proper to the particles of our bodies during their progress towards a more perfect state of existence, namely, the fully individualized or aeriform, instead of the concrete. Towards this they are urged not only by that tendency towards morphological perfectionment which characterizes the entire material economy (for the aeriform is a more perfect state than the concrete), but by the fact that they existed as aeriform before they existed as concrete; for the law of reversion holds good in reference to the particles of which organisms consist, no less than in reference to these organisms themselves.

Our life, considered as *active*, on the other hand, depends on the incidence and the action on us of the vital air or oxygen of the atmosphere, as will appear more fully as we proceed.

Our life, as a whole, thus depends on two causes, both of them insisting upon atomic and molecular motion, and of both of which the normal issue (nothing preventing) is the escape of the organization into the aeriform state.

The wonder is that the non-aeriform, the moist-concrete state, on which plainly the continuance of our existence as individuals depends, can be maintained so long, say in man (barring ill-usage and accidents) for nearly, if not quite, a hundred years. Not less than three-fourths of the entire weight of the body consist of aqueous matter, which, if detained in a sponge merely, and placed in the same conditions of existence as we are, would go off in vapour in a few days. And of the remaining fourth part, nearly one-half consists of elements which, when free, are aeriform also. How, then, may it not well be asked, do our bodies succeed as they do in growing and developing as concretes for many years? And after having attained to maturity, how do they continue to subsist in unity and strength for many years thereafter? No wonder physiologists, no less than considerate observers in general, have concluded that surely there must be here something else and something more than merely the physical and chemical properties of the material elements. And indeed, in having been led to this conclusion, they have been led, in so far at least as man is considered, to a great truth. In man at any rate there is something more and something else than the material atoms of which his organism consists. There is the soul, whose real yet non-molecular nature and natural survival at death I have elsewhere set forth[1] in much the same way as scientific facts in general are set forth and held to be established. But this consideration cannot help us in explaining the remarkable permanency of our organization in the midst of unceasing change, since a similar, nay, a superior permanency continues to exist where manifestly there is no soul,—in the seed of a plant, for instance, which may remain concrete and retain its life for thousands of years.

Before invoking the aid therefore of other principles to explain phenomena which are confessedly of a purely mechanical character, wholly consisting, as they do, in form and motion, it is surely desirable to consider well and to exhaust the possibilities of the functioning of those wonderful morsels of creation, the organic elements, of which all living organisms consist.

Now, looking to the question of long-continued life in this point of view—that is, the question how the elements of our bodies, which are in the main aeriform, are detained in the massive state so long—it is immediately worthy of remark, that we find among them one which at all known temperatures is incapable of the aeriform state; for such is carbon. This element is therefore well suited for being a cement for holding the aeriforms together in one organism, or at any rate for being a sheet-anchor to prevent them from flowing as fast as the tide. Its atomic weight also is so light that but a small weight of it generally diffused through the organism, may go a long way in holding the aeriform elements together, so as to detain them in the condensed or concrete state. Such, then, is the first step in our theory of organization, in respect of the fact that all organisms are, as they must be, concretes.

Though the greater part of the body consists of particles which are ever tending towards the aeriform state, yet organization becomes possible, and organisms owe their concrete state to the fixed and fixing character of the carbon which enters into their composition. It is the peculiar relation of this element to the aeriform state that renders non-ephemeral life possible.

But here it is also to be remarked in reference to such organisms as we are now contemplating, that the fixing and concreting power of the carbon which enters into their composition is greatly aided by the differentiation of their tissues. No phenomenon is more familiar in chemistry than that, in order to unite and remain united or concreted, the elements placed in juxtaposition should be dissimilar. Now, the differentiation or specialization of tissues is merely an example of this condition on the large scale. In fact, that like should first produce like, and then both separate, is not the law of animal and vegetable nature only, but of all morphological action whatsoever. Thus, if a small concrete embryo must, in order to the existence of a full-grown animal, grow in a liquid medium, that medium would soon make it like itself—that is, it would soon liquefy or dissolve it away, if it were not made, whilst it grows, to develop in a differentiated way. And still and on into the full-grown animal frame, the differentiation of the tissues, in the midst of the liquids and aeriforms which enter into the structure of the body, assists the carbon to maintain the organism in the concrete state.

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[1] See "A Sketch of a Philosophy," Pt. I. c. ix. Williams and Norgate.

But it has been already stated, that life in the largest sense (that is, considered as possibly existing where yet there is not the possibility either of thought or feeling) consists in motion. If, then, carbon be, as has just been stated, such a fixed and fixing substance, how, considering the abundance of carbon in nature, may it not well be asked, is life maintained? If the carbon gain the ascendant, must not all become fixed and still; must there not be first sleep and then death? Now, this must be admitted. Carbon is the true hypnotic and narcotic principle. And the normal medicines and poisons of this class, in so far as their active, that is their polar parts, are concerned, are either carbons or isomorphs of carbon which function similarly.[1] Continued life therefore depends as a primary condition on the regulation of the supply of carbon in the organism. And the condition of bodily life and health in the adult may be expressed in general terms by saying that there must be an equivalent action in the tissues of *escape* directly or indirectly into the aeriform state, and of continued *fixation* in the concrete state by carbon. Our food must indeed contain other elements along with the carbon, especially those vapours (common and ammoniacal) in the concreted state, on whose nisus to regain the aeriform state our passive life depends; but, as has been already said, the carbon (in single particles) is an essential ingredient.

And here the important question occurs, Might not the carbon, after having been once introduced into the organism, have been made to serve over and over again, and so the necessity have been avoided of consuming every day a quantity of carbon-containing food, to obtain which gives rise, in the main, to "the struggle for existence" and manifold miseries? To this the answer is, that such an arrangement is conceivable. But it is certain that in that case our life would be wholly passive and somnolent; in fact, no better than a continual hybernation. The carbon, in letting one aeriform element go free while it fixed its successor, would consume as much force in the one case as it would generate in the other. Moreover, though such an arrangement is conceivable, it may be shown that with the organic elements, such as they are, it is not possible. The carbon must fall in with the other elements in pursuing the course of life. And, however much addicted to the use of the spirit of sal volatile some persons may be, yet both the aqueous matter and the ammonia which constitute that genial stimulant must be elaborately steadied by carbon through the action of living organisms, before it come to be concrete wholesome food. It is indeed valuable as concrete matter only in as much as it can act, in part at least, as aeriform, or as matter bent on the aeriform state. But in order that the spring may give motion to the timepiece, it must be well wound up, or, as we may say, rendered as concrete as it may. And similarly, the concrete particles in food are springs wound up, or, more generally, the food itself is a spring wound up, the unfolding of which gives motion and sustains life.

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[1] In the molecular morphology which I advocate, it comes out that the polar parts of nitrogen—the halogens, phosphorus, arsenic, antimony, and other anæsthetics and poisons—are either carbons undecomposably soldered to the equatorial part of the atom, or isomorphs of carbon. But the life of the organism may be rapidly destroyed in many ways, and the theory of poisons consists of many chapters.

But if vapoury matter in the food attains the aeriform state, directly or indirectly, as common vapour or (carbonate of) ammonia by spontaneous determination, how does the carbon, which is in itself of a fixed nature, come to do so? This is now the question for us, and it is that which carries us from what may be called the passive to the active life of the organism; for life, as has been stated, in so far as it consists merely in the movement of the organized vapours towards their own liberation, is merely the unbending of a spring, and therefore merely passive or exhausting.

Now, here, strange to say, this same carbon which we have hitherto had to regard as merely fixing and preventing life, which, but for it, would have been exuberant (but ephemeral), has also been chosen as the recipient of new energy to the individual organism from the cosmos, and as a fountain of activity! At first we have to regard it as still within the organism, and threatening to bring all to a standstill and to death. But when thus and there it is laid hold of by a certain ever-active element in the atmosphere, which formerly bore the expressive name of vital or empyreal air; and by this new element every atom of carbon is supplied with two wings; and by these wings it is enabled to join in the upward and outward movement from the organism, under the name of dioxide of carbon (less happily carbonic acid). And thus is the organism delivered from the carbon, to which indeed it owes its existence as a concrete, but which, as has been shown, would have soon sealed it in death, if it had not been removed.

Still, so far, the agency of the oxygen only enables the carbon to join in the passive life of the organism, while it has been affirmed that the carbon is also made the occasion of imparting to the organism active life from the cosmos. How then does this come about? The answer is, that the oxygen, when it comes near the carbon-atoms within the organism in that loose and used state in which they are serving no good purpose there, impinges on them with such force, that æthereal energy is set free and much heat is generated between them, just as in all fires without flames—for such fires are nothing else but collisions between particles of oxygen and of carbon. Now, when local heat is generated energy is generated; nay, of all the forms of energy locally generated, heat is that which is the most available for effecting mechanical action. Hence, while the organism in virtue of the spring of its materials (ever tending to unbend into the aeriform) has a *passive* life, which the carbon regulates like an escapement in a timepiece, it has also an *active* life, receiving as it does continually new supplies of energy from the atmosphere; the organism, in virtue of the carbon that is in it, serving as a diamond anvil on which the strokes of the vital air are continually coming down.

Our life, therefore, is, on the one hand, *statical*, or such as is ever aiming at self-conservation and repose, in virtue of an equilibrium between the oppositely-tending elements of which the organism consists, the constitutional vapours and gases ever tending to be off, and the carbon ever tending to fix them. On the other hand, it is also *dynamical*, in virtue of new energy received every moment from the cosmos through the vital air of the atmosphere.

And here the question naturally suggests itself, How long can the organism, under this arrangement, be expected to live and last? Now, though here there are two modes of action which, looking to nature generally, it seems difficult to reconcile, and though, in consequence of the perfect elasticity of the material elements of which the organism consists, the action on both sides of the equation must be always rhythmical or pulsatory, yet, if there be a cloacal action as an appendage to the respiratory adequate to carry off such elements as the vital air cannot succeed in rendering aeriform or liquid, no reason appears, when contemplating the fully developed organism in itself, and apart from its previous history, why we might not live for ever. But as we are, and come to be, this is impossible. In order to such immortality the organism would require to be built up in perfection at once. A state of being attained only by growth and development from an embryo forbids such a supposition as immortality. In that case, just as the organism under the law of assimilation acting in relation to *space* after having manifested the ancestral forms and structures must come to a stand, so under the same law of assimilation acting in relation to *time*, it must begin to live its past life over again and aim at reversion to embyro, nay, to cell, again. Now, during this period of reversion, the volatile elements must tend to gain upon the consolidating particles of the organism; and thus the epoch of full development must be also that of middle age, with declining years beyond until a second childhood is reached; and of this the issue must be, that the whole organism having lived its day, shall tend to break up into an aggregate of cells, and so to cease to function as a unity, and die.

Happily this tendency to revert to the state of the embryotic or individually cellular state is not really end, which at first sight it seems to be. For while in slightly differentiated organisms it succeeds in the individual in constructing out of the existing organism, buds, spores, ova, which can continue the species by succession; and in more highly differentiated races, germ and sperm, which taken together can do so (Mr Darwin supposes a panspermism!); in that most highly differentiated species, in which all organism culminates, in man, it gives birth, not from the material, but from the æthereal tissue of the organism (an atmosphere or ‹ ynamosphere of which accompanies every material element), to an unity more perfect than that of bud or spore, and more æthereal than germ or sperm or pansperm; yes, it gives birth to a true unity, an immaterial energy or spirit, of which the bodily organism is thus the nurse, and whose destiny is to be assimilated (of course) to the organism during the epoch of its development and residence in the organism, but also to survive, and forsaking the organism when dead, to enter into the realm of light, which is truly its mother, and which has been also previously, though on a small scale, its home. (For the light material and wonderfully-expanded molecules of the cerebral organism which the eye can detect, are but a scaffolding to maintain the unity of the invisible æthereal tissue of which that organism mainly consists, and on the duly centralized currents in which its normal functioning mainly depends.)

Although, therefore, death, and the antecedent sufferings which it implies, be a great punishment, yet, considered on the grand scale, it is an evil more in seeming than in reality. In reference to that species in which the animal kingdom culminates, in man, the maintenance of the race, not by the immortality of the individual, but by a succession of individuals, is productive of grand results. It both multiplies, as fast as life and death, beings capable of endless intellectual enjoyment, and it renders creation on the great scale as it obviously is in detail, cyclical; so that what begins by Spirit (that of the Creator namely, and the Spirit world) ends or reverts by giving to creation spirits again, now secure from the reach of death and the risks to enjoyment, which sensibility in a material vehicle implies.

But enough has already appeared to lead to the apprehension that these risks of suffering in life, whether short or long, must be very great. Nothing, indeed, but the maintenance of such continuity, both in the structure and the functioning of the individualized organism as if it were really a unity, can prevent them; for feeling is an unity, and its wellbeing, that is, enjoyment, implies unity, at least as a current circulating through the whole field which it embraces. This may be difficult to demonstrate, but it will not be disputed. Accordingly, it is wonderful to what an extent provision has been made for the maintenance throughout the entire animal organism of unity. Thus, in the first place, there is the comparatively stable continuity and unity of the connective tissue, which is such that, if the various organs were all dissected and dissolved out of it, that tissue would consist of a united set of moulds for every one of these organs, and would be itself a model of the whole body. In the second place, there is the establishment of centralized parallel but closed currents; now radiating and returning all through and over, their centre the brain; now circulating even to the vasa vasorum in the circulation commonly so called, the centre the heart; now plying between the periphery and the interior, as also between special organs, by a general permeability of all the tissues. Admirable is the art employed to maintain a unity of action and reciprocal interdependence among all the parts and particles of the body, amid so much differentiation as actually exists. Nor is it wonderful that it should be so; for, upon the maintenance of this unity, as has been stated, the health and happiness —in one word, the wellbeing—of the individual depends.

Meanwhile, as has been shown, there are physical, nay, organic laws constantly at work to impair that unity. Among *organic laws* working in this direction, ovulation, or a tendency to reversion to the state of ova, may be mentioned, for this implies in the organism as a whole a tendency to the construction of cells in the organism, especially after the age of maturity has been reached. And thus we have to look for infiltration and deposition of granules or cells among the tissues, these tissues remaining otherwise entire. And among *physical laws* may be mentioned that constantly operating natural analysis due to specific heat, in virtue of which, in every mass which is imperfectly individualized, centres of individuation tend to establish themselves, so that the mechanical deposit tends to become crystalline or granular, and ultimately to allow itself to be separated into powder—a process which culminates secularly (or suddenly on the supply of adequate heat) by the complete individuation of the constituent particles as aeriform. Now, these laws imply not only the infiltration, but the transformation, degeneration, and wasting of tissues. And if the granules resulting be neither capable of the aeriform state, so that they may be eliminated by the lungs or the skin, nor soluble in the liquid that circulates through the tissues, so that they may be eliminated by the cloaca, their detentions in the organism cannot but be more or less injurious.

Thus, corresponding to any defect in that vital energy and intimate and universal circulation of vital fluid, nervous and sanguineous, by which the unity of the organism is maintained in health and especially in youth, the appearance of granulation among tissues is to be looked for, and that of one or other of two kinds—first, *infiltrations* among healthy tissues, and, secondly, *degenerations* of tissue itself, substituting that tissue and ruining its functioning.

Yet all we find here is, as is generally found, that these products, when morbid—whether the infiltration or the granulation of the tissues—are merely the products of normal action become abnormal through excess or defect of balance. Reversion, or the tendency of developing and developed matter, now become a mass, to be a cellular mass, and to construct within itself cells similar to what itself once was as germ and sperm in appropriate organs, is normal and necessary to the continuance of species in our planet. But where it cannot succeed in completely doing so—that is, in others than in the appropriate organs—still that it should tend at least to do so and to construct cells generally, is unavoidable, unless the tendency be duly arrested by that which maintains the organism as a unity. Aeriformation also implies a tendency to the individuation of separate particles, and is the very spring of life; but either process, even when it succeeds, implies fatal wasting away, unless it be met both by the nisus of the organism at unity, and by an adequate supply of suitable food. The conditions of continued health, therefore, as opposed to the degeneration of the tissues, in a general view we might indicate as—

1. A moderate and reserved reproductive habit.
2. Equable but well-sustained all-embracing vital currents by heart and brain at a temperature not higher than necessary.

As a most elementary normal illustration of the construction and infiltration of granules in an organic tissue, there may be mentioned that of the corpuscles of the blood. It is true that the blood, being liquid in life, is not usually considered as a tissue, but there can be no doubt that its integrant elements are large and highly composite, and, though mobile among each other during life, have yet organic or specific relations to one another, constituting as to the whole in health a most exquisite structure, to which the term tissue may be justly applied. Now, it is to be remarked that, as we ascend the scale of the animal kingdom as to species, and in the individual as to age from intra-uterine life to maturity, the corpuscles of the blood increase in number and variety. This, then, is a verification of the theory which ascribes their construction in the plasma, in part at least, to the same law as gives germ and sperm corpuscles in the generative glands, namely, the fact that the entire vital energy and organism of the individual was primarily itself corpuscular, which fact the organism tends to perpetuate under the law of assimilation (reversion), by forming corpuscles within itself where suitable matter is supplied, as normally it is in the blood, the generative glands, etc., and abnormally in other regions.

As not less normal perhaps than the blood-corpuscles, may be classed fat-corpuscles, which, moreover, the former seem to involve. Such corpuscles do indeed exist in all suitable food, but it is certain that the organism has also the power of constructing them out of amylaceous, albumenoid, or other material. And when fat does not exist in excessive quantities, it is easy to see that it must be of great value in the organism. The elemental molecule of stearine itself is the most beautiful structure which chemistry has to exhibit. It is a perfect store both of hydrogen, with which to construct aqueous or volatile matter, and carbon, with which to construct fixing matter; and both for regulating the temperature of the organism. The fat or oil element is also eminently spherical. When infiltrated into fibrous tissue, it therefore serves well as dunnage to prevent the coalescence of fibres, and to secure room for their normal development. It also comes out in that theoretical synthesis which molecular morphology enables us to accomplish, that the fat or oil globule will tend to develop into a pigment granule on the one hand, and, when duly supplied by oxygen, into carbonate of lime on the other—a statement which will seem very strange to those who have not made themselves acquainted with molecular morphology, which I advocate, and which explains so many phenomena in physiology.

But an excess of fat-corpuscles within the organism must bode evil not only as so much useless weight, but because, proportionally to its quantity, it must act assimilatively or catalytically in producing more; and, indeed, may in this way strengthen, or even induce, in the organism the habit of fatty degeneration, in which fat is not merely infiltrated into sound tissues, but generated by the transformation of these tissues into itself, with loss of continuity and contractibility, and indeed of life; all which happens to an immense extent in dead bodies, when in the grave, especially when massed together.

Somewhat similar remarks might be made with regard to the construction of glycogenic granules in the organism, the value of which, when generated in the right place (the liver) for the construction of tissue, I have shown in this Journal.[1] But as to the amylaceous degeneration, etc., these products seem rather to belong to that category which contains those corpuscles which, under the effort of nature to get rid of them by solution of the adjacent tissue, constitute the various forms of disease so often occurring which is too well designated by the term malignant.

Considered, however, generally, and merely as consisting in the development of separate cells where there were otherwise continuous tissue, it is not possible to see how man can altogether escape from a liability to them so long as he is himself the product of growth and development from a cell, nor could indeed afford to purchase entire immunity, since in that case he must sacrifice his mother's milk, his means of continuing the race—nay, must lose his own soul.

We must therefore accept this liability, merely doing what we can to prevent everything that is excessive and abnormal in this line, by taking all measures to maintain, in full tide, that all-pervading current of vital force, nervous and vascular, by which the whole organism is preserved as a unity. How to prevent otherwise a fatty, or osseous, or watery, or diabetic, or tissue-degenerative habit, when it shows itself, is not easy to be discovered.

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[1] For August 1868, art. iii., "The Hepatic System in Animals an Apparatus for preventing the Animal Cells from being coated by Cellulose." See also Nos. for August and September 1871.

ARTICLE III.—*On the Nutrition of Muscular and Pulmonary Tissue in Health and in Consumption; with Remarks on the Colloid Condition of Matter.* By WILLIAM MARCET, M.D., F.R.S.; late Senior Assistant-Physician to the Hospital for Consumption and Diseases of the Chest, Brompton, and to the Westminster Hospital, London, etc., etc.

(*Read at the Meeting of the British Association at Edinburgh, August* 1871, *and communicated on the present occasion in a condensed form.*)

THE object of the present communication is to show under what form the muscular and pulmonary tissue undergoes the process of waste and repair in health, and when the body is labouring under consumption. The inquiry was first applied to the nutrition of tissues in the healthy condition, and the results obtained were embodied in a paper communicated, last April, to the Royal Society. Since then I have completed a similar investigation with respect to human muscles and lungs, after death from consumption, and now also beg to offer the results of this inquiry.[1]

In the course of these researches my attention was directed to the condition of matter Graham has called *colloid*—a subject closely connected, as will be seen, with the phenomenon of the nutrition of vegetables and animals, and on which a few remarks may not be misplaced on the present occasion.

Graham discovered from his admirable investigation into the laws of liquid diffusion, that, as a rule, substances which cannot be obtained in the form of crystals, such as gelatine, fail to diffuse readily when in a state of solution in water; and that, on the other hand, substances which can be prepared in the form of crystals, such as common salt or sugar, are as a rule readily diffusible. The former he has called *colloids*, and the latter *crystalloids*.

When colloid substances solidify from their state of solution without being dried up, they either gelatinize or become gummy and adhesive; while crystalloid substances solidify into crystals.

Now a jelly, although containing an enormous proportion of water, is not exactly wet, and cannot be considered as holding water in the free state, obviously because of the peculiar relation which exists in a jelly between the water and the solid substance; but if a strong solution of common salt be brought into contact with a jelly of gelatine, it softens down and becomes nearly liquid, apparently because of this relation, whatever it is, being destroyed. Chloride of sodium may, therefore, be said to interfere with the colloid condition, or one of the colloid properties, of gelatine. An excess of water may be considered as producing a similar effect, as a too highly dilute solution of gelatine will not gelatinize on cooling.

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[1] In order to make this communication as short as possible, I have been compelled to omit many particulars which may be of interest or useful as assisting to establish the facts resulting from my inquiries. These will be published subsequently in full.

I shall have an opportunity of showing that, in certain pathological conditions of tissues, the amount of chloride of sodium and water they contain is increased beyond the normal proportion; in that state the tissues become wet, just as if they had been subjected to a loss of that peculiar relation between a solid substance and water which constitutes the gelatinous state.

Colloid Condition of Vegetables.

The animal body, taken as a whole, may be considered as a colloid mass, both blood and tissues being colloids. The colloid state of the substances this mass consists of can be traced into the vegetables used as food.

I have found, by experimenting on wheaten flour, potato, and rice, that these different kinds of vegetable food contain a considerable proportion of colloid phosphoric acid and colloid potash, or of phosphoric acid and potash which failed to pass through a dialyser in twenty-four hours;[1] but the most remarkable of these results was the fact that, notwithstanding the great difference in the composition of the above vegetables, yet the proportions of phosphoric acid and potash colloid to the total amount of these substances respectively, was nearly the same in the three cases; this is shown in the following table:—

Found on 100 grammes.

	Phosp. Acid.	Potash.
Wheat, . . .	0·3142	0·1797
Potato, . . .	0·0911	0·5801
	0·111	0·678
Rice, . . .	0·202	0·0856

Proportion of Colloid to total.

	Total Phosp.	Coll. Phosp.	Total Potash.	Coll. Potash.
Wheat, .	1	0·60	1	0·21
Potato, . .	1	0·58	1	0·28
		0·54		0·24
Rice, . .	1	0·50	1	0·22
Mean, . .	1	0·55	1	0·24

Consequently, the mean proportion of the total to colloid phosphoric acid in wheat, potato, and rice is nearly two to one; and of total to colloid potash nearly four to one; and these mean results are nearly the same in the three cases.

In the course of the present investigation a number of samples of ox-blood were submitted to analysis, much in the same way as the above vegetable products; and it is very remarkable that in two cases—one especially—the proportions of phosphoric acid and potash colloid to total respectively were found to be nearly the same as those existing in wheat, potato, and rice; from which circumstance it appears that, under certain physiological conditions consistent with health, the proportions of colloid to total phosphoric acid and potash respectively actually remain the same in the blood as in the food from which this blood has been derived, establishing a remarkable relation between blood and vegetable food. This is assuming, of course, that the food taken by the animals whose blood was examined exhibited colloid proportions of phosphoric acid and potash similar to those found to exist in wheat, potato, and rice.

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[1] In this experiment the flour was mixed with a large proportion of water, and the nearly fluid mass was subjected to dialysis.

It appears at first sight remarkable that such substances as colloid phosphoric acid and potash should really exist, these substances being only known, so far, as crystalloids. Such, however, is a fact; and not only do plants prepare them, or take them up from the soil, but I have succeeded in obtaining these substances artificially, by dialysing mixtures of phosphate of soda and chloride of potassium. The whole of the chlorine and sodium, or nearly so, passes through the dialyser, while a small proportion of phosphoric acid and potash are left, which no longer crystallize, but assume a thick adhesive character when sufficiently concentrated.

It does not appear unlikely that these colloid substances may be formed in the soil by a process of diffusion owing to the action of rain-water; but I also believe that vegetables have the power of preparing them, or rather separating them from crystalloids, the latter being washed away principally from the leaves by the rain, while the colloid substances remain.

Constitution and Nutrition of Muscular Tissue in Health.

After considering very closely the present subject, I have come to the conclusion that muscular and all other animal tissues are composed of three different sets of constituents, quite distinct from each other. One, which forms the fully-assimilated or ripe tissue; a second, constituting the material destined to the nutrition of the tissue; and a third, which includes those substances resulting from the waste of assimilated tissue—they are effete, and on their way out of the body. The nutritive material, together with that which is effete, may be considered as pervading the tissue in a state of solution; while the tissue proper or actual fibres, connective tissue, and other anatomical elements, may be considered as insoluble.

The organic material, which becomes transformed into fibres and cells, is albumen; the mineral matter is phosphoric acid and small proportions of potash and magnesia. Chlorine and soda are present in minute quantities, but do not form part of the tissue proper.

The method adopted to separate these three sets or classes of constituents of muscular tissue and effect their analysis was as follows:—200 grammes of muscular tissue were minced and extracted with 500 cubic centimetres of distilled water, the mass being strained through calico or muslin. The volume of the extract and weight of the residue in the cloth were determined, and this residue was dried in order to ascertain the amount of water it contained. The albumen, phosphoric acid, and potash, were now determined in the extract, together with the nitrogen in the filtrate from the albumen after coagulation by heat. Most of the residue left on first treating the minced flesh, and which had been dried, was very carefully incinerated, a portion of the mass being put aside and afterwards burnt with soda-lime for the determination of its nitrogen; the ash was submitted to analysis.

The water in the fibrous residue, from the original treatment of the flesh, represented so much extract; and the composition of this extract was calculated from the result of the analysis of the actual extract. By subtracting the numbers thus obtained for the various constituents from the amount of the corresponding substances found in the ash of the original insoluble residue, the difference gave the proportion of the substance in the tissue proper or the ripe or fully assimilated tissue, the nitrogen being calculated as albumen. Thus the first class of constituents was obtained. The second class was derived from the first by calculating proportions similar to the following: the albumen of the first class is to the phosphoric acid of that class as the coagulable albumen in the extract is to the phosphoric acid of the second class; the coagulable albumen belongs to the second class, and is taken into account for the calculation of every one of its constituents.

The third class of constituents was calculated from the composition of the total extract from which the constituents of the second class were respectively substracted.

Four analyses of ox-flesh, conducted as stated above, gave results agreeing with each other: the mean of these four analyses being as follows:—

On 200 grammes.

	1st Class. Muscular Tissue proper.	2d Class. Nutritive Material.	3d Class. Effete Material.
Albumen, . .	28·070	5·745	3·70
Phosphoric acid,	0·251	0·050	0·563
Potash, . .	0·086	0·017	0·764

The nutritive material I have stated to be in the colloid condition; this is not an assumption, but the result of actual observation, as I have, after dialysing flesh, and juice of flesh, for twenty-four hours, found the colloid contents of the dialyser to yield proportions of albumen, phosphoric acid, and potash similar to those obtained by calculation as described above.

The proof that the phosphoric acid and potash of the effete material are crystalloid, is the fact that the proportion of these substances present is precisely that which would be required to make pyrophosphate of potash or tribasic phosphate of potash with two equivalents of fixed base.

	Mean Found.	Found on 100.	Theory.
Phosphoric acid, .	0·563	42·4	43
Potash, . . .	0·764	57·6	57[1]

The albumen of the effete material is not really albumen, but this substance in process of elimination, under the form of kreatine, kreatinine, and other crystalloid compounds, assuming, of course, that all other nitrogenized compounds present besides albumen are crystalloid.

As a final remark on the nutrition of muscular tissue, it is very interesting to observe that, as the proportion of coagulable albumen present must regulate the total amount of the nutritive and effete matter, it follows that there is apparently an accumulation of nutritive matter in flesh amounting to about one-third more than the quantity required for immediate use, because the proportion of albumen coagulable to the albumen in the effete state is 5·745 to 3·70; this may be considered a provision of nature to allow of muscular exercise during prolonged fasting.

Constitution and Nutrition of the Muscular Tissue of Fish.—The Salmon.

The analysis of a sample of salmon's flesh showed that it contained a much larger proportion of coagulable albumen (12·47) than that of the oxen (5·745), this being either a store for a rapid formation of flesh, so as to allow of violent muscular exertions without an increased supply of food, or a means for a speedy addition of muscular tissue. The potash and phosphoric acid of the effete material are not so completely crystalloid as in the case of ox-flesh, their proportions being:—

	Found.	Theory.
PO_5, . .	53·3	43
KO, . .	46·7	57

This probably accounts for the fact that a high proportion of these substances was found in the effete material.

I was not prepared for this accumulation of effete substances in salmon, the medium in which fish is living being such as to transform it into a perfect dialyser.

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[1] The numbers found in the four analyses were:—

	I.	II.	III.	IV.
Phosphoric acid, .	43·8	43·7	41·7	40·4
Potash, . . .	56·2	56·3	58·3	59·6

On the part Blood takes in the Nutrition of Flesh.

This is an extremely difficult subject to investigate, and the results obtained have not proved, I regret to say, in proportion with the labour bestowed upon the work. It has, I believe, been satisfactorily shown that blood contains more albumen, phosphoric acid, and potash than an equal volume of serum of the same blood; and as those substances are precisely those which are required for the nutrition of muscular tissue, it might be concluded that the blood-corpuscles are not unlikely to be concerned in the nutrition of muscle, by taking up those substances muscular tissue requires and yielding them to flesh. In order to test the accuracy of this view, I undertook to determine experimentally whether the *excess* of phosphoric acid in blood over the proportion of this substance in an equal volume of the serum of that same blood, bore to the corresponding excess of potash a relation similar to that which I had found to exist between the phosphoric acid and potash in the effete portion of muscular tissue.[1] Out of six analyses of blood and serum, one yielded results agreeing very closely with the theory; with another the results agreed but approximately; and, finally, with the remaining analyses they differed.

The difficulties in a work of this kind are both analytical and physiological; they are analytical, inasmuch as there is a certain, although I believe but small, proportion of phosphorus which is oxidized in the process of incineration yielding too high a result for the phosphoric acid. Moreover, the greatest care must be taken in the incineration, lest a portion of ash be lost by volatilization during that part of the analysis. The general analytical result obtained was, that in ox-blood the phosphoric acid and potash vary but little in different samples of serum, while they may differ considerably in different samples of blood; but I invariably found the proportion of these substances higher in blood than in their corresponding serum. The difficulty of a physiological nature in an inquiry of this kind is the uncertainty as to the state of the animal with respect to its digestion and nutrition when slaughtered; it may have been feeding largely or very little in the butcher's stall, or it may be in an abnormal state of exhaustion because of its having been sent from the country a day or two before slaughtering. Two analyses out of six, agreeing tolerably with the theory (this must be considered in a physiological, not in a chemical, point of view), appear to show that it is not unlikely to be true, although of course it does not establish the correctness of the view. The relations obtained in these two analyses were as follows, and it is impossible to admit that they were fortuitous:—

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[1] Strictly, this relation could only be expected to exist if blood had exclusively muscular tissue to nourish, or if the nutrition of the other tissues was attended with the same chemical change as occurs in that of muscles. The skin and internal organs form but a small proportion of the whole body, and the nutrition of bones is a very slow process. On the other hand, the muscular tissue, which amounts to 40 per cent. of the weight of the body, may be considered as rapidly nourished, and consequently the nutritive power of the blood is concerned in a very large proportion, I should say four-fifths or nine-tenths, in the nutrition of muscles.

Relative excess in Blood over proportions in Serum.

Analysis I.	Found.	Theory.
Phosphoric acid, . .	44·7	43
Potash, . . .	55·3	57
Analysis II.		
Phosphoric acid, . .	52·2	43
Potash, . . .	47·8	57

Constitution and Nutrition of Pulmonary Tissue in Health.

The analysis in the present case was conducted precisely in the same way as in that of muscular tissue. Three samples of pulmonary tissue from three different oxen, submitted to analysis, gave results agreeing fairly with each other, the mean of which was as follows:—

On 200 grammes.

	Tissue proper.	Nutritive Material.	Effete Material.
Albuminous material,	19·895	13·029	1·410
Phosphoric acid, .	0·481	0·314	0·058
Potash, . .	0·051	0·033	0·451
Soda,. . .	(0·048)	(0·033)[1]	0·521 (total)
Chlorine, . .			0·439

On 200 grammes.

Water, . .	158·0
Fat, . . .	4·28

It will be seen at once that there is a great difference in the composition of the effete material in pulmonary and muscular tissue; the effete phosphoric acid and potash in the lungs being 11·4 to 88·6, while in muscles their proportion is 42·4 to 57·6. This circumstance may be satisfactorily accounted for. I explained in a communication to the *Lancet* for February 2, 1867, how the expiration of carbonic acid from the lungs during respiration was caused by the diffusion of the gas from the blood through the membrane of the pulmonary tissue, and its final evolution, together with moisture. By passing through the substance of the lung-tissue, carbonic acid must combine with that portion of the potash which would otherwise be present in the free state, transforming it into a crystalloid and therefore diffusible condition. It may consequently be concluded that, in the process of nutrition of pulmonary tissue, the potash is mostly eliminated as carbonate.

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[1] The soda of the two first columns has been placed between brackets, because I do not believe any soda to be directly concerned in the nutrition of pulmonary tissue.

Constitution and Nutrition of Muscular Tissue in Phthisis.

The state of emaciation to which the human body is generally reduced in consumption is a certain indication that nutrition is greatly impaired in the present disease. Having investigated the subject of the nutrition of muscular tissue in health, I applied the same method of inquiry with the object of ascertaining the alteration this function undergoes in phthisis. The result showed that the nutrition of muscles in consumptive subjects is abnormal as to the quantity and condition of the water present—the quantity amounting to 166·5 grammes instead of 154 grammes for 200 of healthy flesh, and being therefore increased in consumption. Moreover, on examining the muscular tissue of consumptive bodies, it will be usually observed, especially where there is much emaciation, to be wet and soft, instead of being firm and dry as is the case after death from other diseases and with the flesh of animals slaughtered in health. It therefore appears that the water in flesh after death from tuberclosis, besides being in excess, is in a less colloid condition, or, in other words, has for the solid constituents of flesh less of that peculiar attraction it has in health, and which binds them together; and this circumstance must be opposed to the formation of muscular tissue in consumption.

Besides the altered condition of the tissue respecting its water, I find that the proportions of chlorine and soda in the muscles of consumptive subjects are higher than in health.

The water being in excess, will of course account for the solid constituents being deficient in 200 grammes of the flesh.

The following is a tabular statement of one of my analyses of human muscular tissue, after death from phthisis. Two others have yielded similar results:—

On 200 grammes.

	Tissue proper.	Nutritive Material.	Effete Material.		On 100. Found.	Theory.	
Albuminous material,	20·520	4·770	2·700				
Phosphoric acid, .	0·160	0·037	0·318		43·2	43	effete.
Potash, . .	0·035	0·008	0·418		56·8	57	
Soda, . . .	(0·021)	(0·005)	0·389	(total)			

On 200 grammes, flesh.

Water, . . .	166·5
Fat, . . .	3·64

The analyses show, that although the solid constituents of flesh—albumen, phosphoric acid, and potash—be deficient, still they exist in the same relative proportion as in healthy muscle,—the phosphoric acid and potash of the effete material bearing to each other the same relation as they do in pyrophosphate of potash, namely, 43 to 57, the exact numbers in the above analysis being 43·2 and 56·8.

The increase of chlorine and soda in muscles in phthisis is very remarkable; I do not consider these substances as contributing to the formation of the mature, or insoluble, tissue, although they are invariably distributed in very small proportions throughout its bulk, but they must be concerned in the formation of flesh. The following table shows the comparative proportions of chlorine and soda in healthy flesh, and in muscular tissue after death from phthisis—the mean being, for 200 grammes of healthy ox-flesh, chlorine 0·167, and soda 0·239; and for 200 grammes of muscular tissue, after death from consumption, chlorine 0·379, and soda 0·440:—

Chlorine and Soda in Muscular Tissue.[1]

In healthy Muscular Tissue (Ox-flesh).

Analysis.	Chlorine.	Soda.
I.	0·196	
II.	0·164	
III.	0·184	
IV.	0·133	
V.	0·172	
VI.	0·212	
		0·297
VII.	0·210	0·333
VIII.	0·094	0·193
IX.	0·176	0·289
X.	0·117	0·172
XI. Human	0·182	0·155
Mean,	0·167	0·239

eq^{t}. to 0·275—Nacl.

In Muscular Tissue from Human Consumptive Subjects.

Analysis.	Chlorine.	Soda.
I.	0·264	
II.	0·343	
III.	0·292	
IV.	0·404	
V.	0·469	
VI.	0·433	
VII.	0·390	
VIII.	0·393	
IX.	0·357	0·438
X.	0·450	0·487
XI.	undetermined.	0·394
Mean,	0·379	0·440

eq^{t}. to 0·634—Nacl.

It will now be interesting to consider how this increase of chlorine and soda in the muscles of consumptive patients may be accounted for. In health, there either exists in blood a force which retains in it the chloride of sodium it contains, or there is present in muscular tissue a power which prevents the passage of this substance into it, except in very small proportions; this force is opposed to the physical phenomenon of diffusion; chloride of sodium is the most diffusible of all substances entering into the composition of the body, and it is remarkable that there should be, during life and in health, a force preventing to a considerable extent the diffusion of this substance (assuming chlorine to be in combination with sodium in blood) from blood into muscular tissue. In consumption, however, this force is lessened, and the physical force of diffusion becoming proportionally increased, causes an abnormal passage of chloride of sodium from blood into flesh. This phenomenon imparts to the nutrition of muscular tissue in phthisis a physical character it does not possess in health.

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[1] The small proportions of soda, under the head of tissue proper, are not included in this table.

Constitution and Nutrition of Tubercular Pulmonary Tissue.

I have shown that the normal nutrition of the lungs apparently depends on a free passage of carbonic acid through their substance. When the function of respiration is either interfered with or arrested, the nutrition of the pulmonary tissue must be altered, or cease altogether, in which case putrefaction will rapidly set in. It is remarkable, however, that in death from phthisis, even where the tissue of the lungs is entirely destroyed, and therefore quite unfit for the purpose of respiration, it emits no smell of actual putrefaction; and from this circumstance I had concluded, long before undertaking the present inquiry, that even in this state the nutrition of the part had not ceased.

The portion of the lungs submitted to analysis had undergone caseous consolidation, and was more or less extensively in the stage of softening, being totally useless as organs of respiration; yet I shall show that the morbid product still underwent a process of nutrition, although different from that the pulmonary tissue had been subjected to in the healthy state. I have found the remarkable fact that, under the above condition, the material substituted to healthy pulmonary tissue undergoes a process of nutrition similar to that which is peculiar to flesh. In healthy lungs, the potash on its way out was found to be greatly in excess of the proportion necessary to make a crystalloid compound with the phosphoric acid present, and I had concluded that this excess of potash was eliminated through the agency of the carbonic acid emitted during respiration; after complete consolidation of the pulmonary tissue, no carbonic acid being given out, phosphoric acid takes its place, and pyrophosphate of potash or neutral tribasic phosphate of potash is formed, precisely as occurs in the nutrition of muscular tissue.

The method of analysis was precisely the same as that which had been applied to flesh and healthy pulmonary tissue.

The following is the mean result of the analyses, amounting to three in number: they agreed very tolerably well with each other, considering the nature of the material submitted to analysis:—

Mean Composition of Tubercular Lungs, partly consolidated and partly in a state of softening.

In 200 grammes.

	Tissue proper.	Nutritive Material.	Effete Material.	Mean on 100.	Theory.
Albumen, .	15·72	7·06	2·388		
Phosph. acid,	0·289	0·130	0·276	47·7	43
Potash, .	0·027	0·012	0·302	52·3	57
Soda, . .	(0·052)	(0·023)	0·544 (total)		
Chlorine, .			0·452		

On 200 grammes.

Water, .	165
Fat, .	3·91

The numbers for the phosphoric acid and potash effete in the three analyses were:—

	I.	II.	III.
PO_5, . . .	44·7	46·8	50·8
KO, . . .	55·3	53·2	49·2

It is interesting to observe that, in analysis No. III., where the proportions found are the farthest from those required for the formation of a pyrophosphate, the absolute numbers obtained are much the highest. This is explained by the circumstance that in the sample analyzed, No. III., the phosphoric acid and potash are less crystalloid, and consequently not so diffusible as in the two other samples. These numbers, for the three analyses, are as follows:—

On 200 grammes.

	I.	II.	III.
PO_5, . .	0·220	0·236	0·377
KO, . .	0·272	0·268	0·365

The accumulation of effete phosphoric acid and potash in salmon has been accounted for precisely in the same way.

The analysis of tubercular pulmonary tissue shows, moreover, that its proportions of tissue proper and nutritive material are relatively less than in healthy lungs, this deficiency being made up by the presence of an increase of water and effete or crystalloid material.

One of the most interesting points in connexion with the physical condition of tubercular lungs, is the fact that the state of semi-fluidity in which they are found when undergoing softening, is attended with but a trifling increase (3·5 per cent.) of the quantity of water pulmonary tissue contains in the normal condition. At first sight this appears to be unaccountable, but on a closer consideration it will be explained quite satisfactorily. In health the lungs may be considered as containing water in a perfectly colloid state, indeed much in the same condition as water in a jelly. In the case of tubercular lungs, the colloid attraction of the water for the solid constituents may be considered as lost or much diminished, and the part becomes semi-fluid. As healthy nutrition consists in the fixing of colloid material, it may be readily understood that the present morbid condition is opposed to the formation of healthy tissue.

I have much pleasure in acknowledging the valuable assistance I have had in the analytical part of the present inquiry from Messrs F. A. Manning, H. Bassett, and M. J. Salter.

Conclusions.

The conclusions I have obtained from the present inquiry may be summed up as follows:—

1st, Phosphoric acid and potash may be prepared artificially in the colloid state, by dialysing a mixture of chloride of potassium and phosphate of soda.

2d, Wheaten flour, potato, and rice are found to contain, respectively, nearly the same proportions of colloid phosphoric acid and colloid potash, compared to the total quantities of these substances present; and these same proportions of phosphoric acid and potash are occasionally found to exist also in blood.

3d, Plants form colloid material, although they may find some ready prepared, or in process of preparation in the soil.

4th, Muscular tissue in health is formed of three classes of substances:—(1.) Those which constitute the tissue proper; (2.) Those destined to become transformed into the tissue proper, and make up for the waste; (3.) Those which are in process of elimination—the first being solid and colloid, the second fluid and colloid, and the third soluble and crystalloid; the phosphoric acid and potash in the third class of substances occur precisely in the proportion required to form crystalloid pyrophosphate of potash. This is invariably true for the flesh of animals highest in the scale; but in the salmon the proportions do not quite agree with those of the above compound, which appears to show that the material in progress of elimination is somewhat less crystalloid in fishes than in the flesh of the higher animals, and this would account for an accumulation of effete matter in the salmon.

5th, Blood-corpuscles appear to take up albumen, phosphoric acid, and potash in the blood, and yield them in the proper proportions to muscular tissue for its nutrition; but this subject requires further investigation.

6th, The nutrition of pulmonary tissue in health differs from that of muscular tissue, inasmuch as the proportion of phosphoric acid to the albumen in the tissue proper, and consequently also in the nutritive material, is much higher in the lungs than in flesh; and that of the potash in the effete material is much higher, proportionally, to the phosphoric acid in pulmonary than in muscular tissue. This excess of potash is apparently eliminated under the form of carbonate.

7th, The nature of the chemical changes which take place within muscles in consumption is the same as in health, but these changes are lessened in degree, the amount of nutritive material supplied being diminished. Moreover there appears to be in muscular tissue in phthisis a beginning of that separation of water from the solids which, under other circumstances, only occurs some time after death.

8th, Muscular tissue in consumption contains more soda and chlorine than in health; in the mean proportion of 0·117 of chlorine and 0·239 of soda in health, to 0·385 of chlorine and 0·446 of soda in consumption, for 200 grammes of flesh; showing apparently that the physical power of diffusion which had been kept in abeyance in health begins to act in phthisis.

9th, The pulmonary tissue in phthisis, when consolidated and softening, still undergoes a process of nutrition; but this phenomenon is different from that which occurs in health, and becomes remarkably like the nutrition of muscular tissue.

10th, The pulpy state of tubercular lungs in the softening condition appears due to an altered relation between the water and solids, and not to a fatty degeneration. The diseased organs, moreover, contain less colloid and more effete or crystalloid material than in health, these several phenomena showing, as in the case of muscles, a commencement of physical change.

11th, Finally, death from consumption, when not due to asphyxia from deficient action of the organs of respiration, is apparently owing to the physical power of matter overcoming the phenomena of life, the nature of which is still a mystery, physical changes actually commencing before life is extinct.

ARTICLE IV.—*Pythogenic Fever in Reykjavik during the Summer of* 1871. By T. HJALTELIN, M.D., Chief Physician of Iceland.

ALLOWING me to give the following description of a malignant fever which last summer raged in our little town, I beg to mention that I am using the word *pythogenic fever* for that kind of typhus to which French writers generally give the name of *fièvre typhoide*, and which in England often goes under the name of *enteric fever*, and which in Germany is called *abdominal typhus*.

Pythogenic fever was, so far as I know, first named so by the eminent and excellent writer on fevers, Dr Charles Murchison, of London; and it is to be regreted that the awkward name of "typhoid fever" is still so much used, although it certainly has no logical or etymological meaning, and may easily be misunderstood by young and inexperienced medical students, or even by young practitioners.

Before describing the chief symptoms of that malignant fever which tormented us, I shall make some few remarks on its antecedents and probable causes, which, according to my conviction, were remarkable and evident enough, and show that this fever sprang from putrid emanations.

The season of our last summer was, for our latitude, uncommonly hot, dry, and calm—the temperature of the three summer months, June, July, and August, being about 8° of Fahrenheit above the mean annual average heat of those months. The season was also uncommonly calm, and the little breeze or gale sometimes occurring was blowing from the sea. Rain seldom fell; and when some showers happened they did not last long, but were followed by clear sky and burning sunshine, the heat of which is the more strongly felt as we have no trees to shelter us.

The atmosphere of our town was at this time not very salubrious.

The breeze, blowing from the seashore, filled our air with odour of rotten seaweed and the emanations from putrid mollusca mixed with the seaweed. Adding to this an enormous number of horses, driven to the town for sale or carrying goods to and from the country, standing in the streets for many hours, and leaving there their excrements and urine, one may easily guess the unhappy hygienic state of the place.

The first cases of the epidemic occurred about the beginning of July, and the fever was at its highest pitch at the end of that month; the most fatal days were those of 23d to 29th of July inclusive.

The following short extract of my daily observations will give the reader an idea of our medical climatology at that time:—

Date. July	Barometer.	Thermometer.	Hygrometer and Wind.	Ozone.
23	29·804	58	Dry—Calm.	Only a trace.
24	29·806	58	Dry—Calm.	No trace.
25	29·564	61	Dry—Calm.	No trace.
26	29·634	64	Dry—Calm.	No trace.
27	29·638	62	Dry—Calm.	No trace.
28	29·982	63	Dry—Calm.	No trace.
29	29·902	58	Dry—Calm.	Small trace.

Just in those days now mentioned, many people fell sick with a continuous fever, vertigo, headache, pains in the limbs, furred tongue, white in the middle, red at the tip and the edges, thirst, irregular abrupt sleep, nausea, want of appetite or total aversion to food, and loss of muscular strength. Some of the patients were constipated; others had wandering pains in the abdomen, and some diarrhœa, with uneasy feelings about the precordia; others had already, on the seventh or eighth day, some pain in the right iliac region by pressure of the hand, but generally it was first about the twelfth or seventeenth day that gurgling was remarked in this place. Some patients thus affected could, in the beginning of their fever, leave their bed, or even walk a little about; but they were all incapable of any serious bodily or mental exertions. Many had, from the beginning, some epistaxis, or a little blood-spitting; but the most of these symptoms were, in the first week, of a mild character, although the irregular chills, alternating with heat and flushing of the face, the loss of appetite, the disturbed interrupted sleep, or more or less continuous sleeplessness, led one to suspect the "anguem sub herba jacentem." Many were, nevertheless, inclined to look upon these first symptoms as slight sufferings, occasioned by dyspepsia or digestive derangements, which would soon be better.

Thus, this fever crept on very insidiously, so that many patients which you, in the beginning of the disease, might look upon as only affected by a slight febricula, were, after fourteen to sixteen days, prostrated, sleepless or delirious, with dilated pupils and lenticular rose-spots about the abdomen, mixed with orbices or petechiæ, both on the trunk and the extremities. Bloody diarrhœa also often set in, and ominous dark-red spots occurred about the nates, which sometimes, in a short time, turned into large and malignant bedsores; in others, the bloody diarrhœa became very profuse, and some of them succumbed from mere exhaustion.

The heat of the body was, without exception, very great from the beginning of the fever, and the thermometer applied under the tongue showed from 104 to 106 degrees of Fahrenheit. The fever and the heat were always augmented towards the evenings, and even to that degree that there would be a difference of twenty beats more per minute in the evening pulse compared with that of the morning hours. The danger of every case was evidently parallel to the augmentation of the burning heat (*calor mordax*) of the body, and the steady quickness of the pulse. Deafness was a very well-marked symptom, nearly in all cases, but it came on at very different periods. Sometimes it was first remarked in the second week, or little before the defervescence; at other times, it was a precursory sign for the approaching reconvalescence. In all cases where sulphate of quinia had been administered, it was most remarked. I have never found this a constant bad symptom, neither in typhus nor in pythogenic fever; and I remember still that I, in my younger days, heard it spoken of by some eminent German physicians as a rather favourable than dangerous symptom in all malignant fevers. But be this as it may, it was often absent in the most dangerous cases of this fever, except in one where it was present about a week before death.

The latter, or malignant stage of this fever, was always marked by great prostration, dry and brownish tongue, low and continuous delirium, involuntary evacuations of urine and fæces, stupor, profuse bloody diarrhœa, collapsed face, and, in two fatal cases, with carbuncle-like black crusted boils, with a darkened halo on the extremities. Those boils, which I sometimes also have seen in the worst and most dangerous cases of exanthematic typhus, are undeniable instances of the great likeness between the most malignant forms of typhus and pythogenic fever, and the Oriental plague itself.

The hæmorrhagic form also showed a great deal of malignity, and was extremely dangerous. In some of the patients affected by this form, the blood was in shorter or longer intervals continually dropping, not only from the nose, but also from the tonsils and the buccal cavity; nevertheless, some of these recovered after the use of a strong infusion of galls.

Spasmodic movements—viz., carphology, hiccup, and subsultus tendinum—were often occurring, even in those cases that got well; wakefulness and coma-vigil was also a most frequent symptom in the earlier stages.

Somnolence and stupor were, in a few cases, so profound, that some patients, when in convalescence, had no notion or remembrance of their state during the whole disease. Few patients passed through this fever without more or less severe delirium; but this delirium was seldom so maniacal as is often the case in true exanthematic typhus fever.

Retention of the urine was rare, and far more so than in exanthematic typhus; but the incontinence of urine was, on the contrary, more common. In the beginning of the fever the urine was much diminished in quantity, with strong acid reaction, but in the latter stage it became more clear, depositing phosphates in great quantity. The stools were for the most part of an ochre or dark yellow colour, sometimes quite dark, with the most offensive odour. Meteorism also occurred, but not so often as might have been supposed in this malignant fever; it occurred most frequently in young persons, but was generally relieved either by turpentine fomentations all over the abdomen, or by cold-water clysmata, with a few minims of diluted carbolic acid.

Bronchitis and pneumonia were happily enough amongst the rarer complications in this fever, but whensoever they occurred they were most dangerous, leading quickly to hypostatic consolidation of the lungs.

The respiration was in all cases more or less hurried, and often mounted to thirty-two inspirations in the minute, and sometimes far more, especially in the fatal cases.

In most cases the fever lasted from three to five weeks, but in some the convalescence began about the fourteenth day; the death occurred always in the later stages, and some that were lost died at the end of the fourth week; they all died of exhaustion, unrelieved or unaffected either by stimulants—such as alcohol, ether, musk, quinia, and wine—or by a nourishing diet—such as milk, beef-tea, and extractum carnis of Liebig, etc. The exhaustion was, in most cases, occasioned by hæmorrhage, not yielding to any remedy, but sometimes lessened by a strong infusion of galls. Perforation or peritonitis never occurred, but the chief danger seemed to arise from a specific dissolution of the blood-corpuscles, or perhaps, more correctly, from the rotten or putrid state of the blood, with more or less exhaustion of the heart's action. The fever generally rose very high during the first week, or after eight days; and I remember a young student who, no doubt by great mental exertions, had overworked his brain, in whom the pulse nearly constantly was beating from 120 to 130 beats in the minute during twenty-six days. Only after some sleep produced by hydrate of chloral the pulse fell during the forenoon to 100, but it soon got quicker towards evening, and continued at its fatal height until the agony set in.

The convalescence was often slow, and the patients were very much emaciated for a long time. This emaciation began in the second week, and was for the most part followed by weakness and irregular contractions of the heart. Milk diet and beef-tea, even taken in no small quantity, could not prevent this, and stimulants had no power over it.

This fever was especially frequent in young people, and more than thirty of the affected had not reached their thirtieth year. Sixteen were between thirty and forty, two were more than forty, one about fifty, and one between fifty and sixty. Of children between one and ten years there were about ten, and in them the fever did not last so long as in the adult. It attacked one sex as readily as the other, nearly half the number of the sick being females; but it seemed more dangerous for males than females, and more were lost of the former. Out of both sexes the mortality was equal to 14 per cent. The most dangerous cases were those which had commenced between the 23d and 30th of July, or, as aforementioned, during the most hot and calm weather, when either small or no trace of ozone could be found in the atmosphere. About this time many people who walked about, or were at their usual work, complained of headache, loss of appetite, interrupted sleep, unusual thirst, constipation, or diarrhœa alternating with constipation, and some other well-known precursory symptoms of the pythogenic fever. One very active young man, the sheriff of the surrounding parishes, told me that he found himself very much indisposed when he was in town, but that his indisposition disappeared when he took a long ride on horseback, or was altogether absent from the town. Some people ascribed this indisposition to the summer heat, but I felt convinced that it was occasioned by the same bad atmospheric constitution, which was most strongly felt in our little town. To all people thus affected I ordered a strong dose of calomel combined with rhubarb or a little podophyllin, and I feel convinced that it cut the disease short in many cases, as it also was clear enough that the ominous pressing feelings about the precordia and the irregular state of the alvine evacuations were cured by it. The abortive typhus of the most excellent Prof. Hermann Lebert of Berlin is certainly no fiction, but a real morbid state of the body, and I quite agree with his opinions as to the impossibility of distinguishing between the exanthematic and enteric typhus in such cases.[1] How many there were thus affected I cannot tell, for I had no time to register them, but I remember very well that there were a great many. From those facts, and many other circumstances, it was, in my opinion, quite evident that this fever arose from some deleterious poisonous matter or microzymes floating in the atmosphere, and I could in some houses remark an offensive odour. The sewer system in our little town is still very incomplete, and the inconveniences and dangers of that must, of course, be very seriously felt in the hot and burning sunshine, where no shadowing trees exist to mitigate such a thing.

As to the treatment of this pythogenic fever I may make the following remarks:—

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[1] The words of Lebert run thus:—"Eine zu scharfe ontologische abgrenzung zwischen ileo-typhus, und exanthematischen typhus, is durchaus nich möglich."—Dr Hermann Lebert's Handbuch der Practischen Medicine. Tübingen, 1863. 1 band, page 114.

When the epidemic was at its height, I was rather much occupied in a quite different direction, for I was obliged to spend a good deal of my time in our national assembly, of which I had been nominated as a member by His Majesty our gracious King. The treatment of this fever was therefore to a great deal conducted by a young but very able colleague of mine, Dr Jóneisson, who for the most part was using the general treatment now in vogue at the hospitals of Copenhagen. This treatment is for this fever an expectant and symptomatic one, consisting in an antifebrile diet, with laxative of castor-oil, diluted sulphuric acid, or the so-called mistura acida sulphurica of the Danish Pharmacopœia, consisting of three parts of acidum sulphuricum dilutum, with one hundred of water and twenty-two of a sweet syrup, and sometimes mixed with a few grains of bisulphate of quinia. This drug was given in a half-ounce dose every second hour. When diarrhœa set in, mucilago arabica was administered, either alone or mixed with decoction of cinchona or calumba, in about the same dose as the forenamed sulphuric mixture. Cold epithems were applied to the head, and a current of fresh air was allowed to flow into the sick-room through an open window near the bed. This is the general treatment of enteric fever in the hospitals of Copenhagen, and so it also was here. As I in the meantime am a little doubtful about any decided good effect of sulphuric acid in pythogenic fever, and regarding real disinfectant or antiseptic remedies as the most available ones in this fever, I determined to try some one or other of them, and having recently seen the most decided effect from sulphurous acid, in a most malignant case of confluent smallpox, and also in two cases of enteric typhus, I prescribed that acid in some malignant cases. My hesitation in using it from the beginning of the epidemic arose from a certain fear of deteriorating the air in the small rooms, but as I only intended to use it internally, and not, or at least very seldom, as a fumigation, I was sure it could not really have any serious consequences. I had, moreover, just read some articles on its use in enteric typhus, written by Dr Robert Hamilton, as mentioned in Dr Dobell's Reports for the year 1869, and another still more extensive and encouraging, written by Dr G. Wilks, of Ashford, and printed in the *British Medical Journal* last year, No. 518. It was, moreover, clear to me, from a chemical point of view, that this deoxygenant chemical compound must be far more active in zymotic diseases than the sulphuric acid itself. It is a true and strong antiseptic remedy; it lowers animal heat, as may be shown by direct experiments; it destroys parasitic life, both vegetable and animal; and by its strong attraction for oxygen it prevents putrefaction. By man it can be taken without any remarkable derangement of the health, even to that extent that its odour is given up by the body without further inconvenience. The trials I made with this compound in several mal
cases of pythogenic fever were evidently encouraging, and

upon the system was far more clear and evident than is afforded by the diluted sulphuric acid; and not only was the pulse reduced by its use, but the temperature of the body fell also from two to three degrees of Fahrenheit. This lowering of the temperature had, of course, the most beneficial effect on the patients; the wandering pains in the limbs got mitigated, thirst was quenched, and the patients felt in every respect better. This was a constant effect of the sulphurous acid given in the dose of one-half to one drachm every third hour; but notwithstanding this undeniable good effect of this drug, when it was given early in this fever, I never saw it cut this fever short, although it evidently mitigated it very much, and, so far as I could see, deprived it of its danger. Not a single patient who took the sulphurous acid from the beginning of the fever died, or got any serious bed-sores, but went through the fever in about from twelve to eighteen days. When this remedy was first given in the later stages, it had a far less marked effect on the system. It had then probably not time enough, or came too late, in order to prevent the advanced putrid state of the blood, which by that time had propagated its destructive work over the whole system, and produced those morbid changes which anatomical pathologists regard as the true essence of this fever, but which in reality are the "caput mortuum" of the still little-known biochemical changes going on from the beginning of this and so many other zymotic diseases. Let the noble science of animal physiological chemistry first accomplish its grand work, and a great deal of our pathological collections will have little more signification than the well-known "caput mortuum" of the alchemists. But as we are far from that time, pathological preparations will probably still, for many, many years, be our necessary guide in the arduous art of medical science.

According to my experience, the treatment of malignant typhus and pythogenic fever ought always to begin by clearing out the bowels, and I know of no remedy more fit for that purpose than calomel. It ought to be given as early as possible, as it will then most relieve the portal system, and prevent, or at least mitigate, lienal and hepatic congestions, always more or less well marked in the beginning of enteric fever. Podophyllin has no doubt some specific action, not only on the liver, but most likely also upon the whole abdominal glandular system, and I have seen a very good effect from this remedy given in small doses against precordial pressure. Immediately after the aperient remedies, sulphurous acid mixed with pure water is the best remedy, according to my experience, at least in a pythogenic fever like that I had to deal with last summer. In cases of true, well-marked exanthematic typhus, I would rather trust to iodoform, chlorine water, or some other oxygenizing compounds, for in that disease I have many a time seen the best effect from them. The preference for diluted sulphuric acid in both those fevers, instead of sulphurous acid, can neither be founded on chemical nor practical principles.

Another remedy of which I often made use in this fever was chloral hydrate. From an article in the *British Medical Journal*, 30th April 1870, I learned that it had been tried in the Royal Infirmary of Edinburgh; and as I have the honour of personally knowing some of the excellent physicians to that hospital, this article was a strong inducement to me to give it a fair trial, especially in some cases of great restlessness or long-standing sleeplessness; but although I found the effect of this remedy exactly as it is delineated in the said article, it failed in one case where it was given a second and third time; perhaps for this reason, that it had been discontinued for some days after its first very remarkable effect of producing a profound and long-lasting sleep. In some cases I found it more efficacious when it was combined with a small quantity of muriate of morphia.

REYKJAVIK, 10*th November* 1871.

ARTICLE V.— *On the Sanitary Aspect of the Sewage Question; with Remarks on a little-noticed Cause of Typhoid Fever, and other Zymotics.* By ANDREW FERGUS, M.D., etc., Glasgow.

(*Read before the Medico-Chirurgical Society of Edinburgh*, 17*th January*.)

I BEGAN the study of this question long ago, with a mind thoroughly unprejudiced on the subject. The longer I study the matter, and the more I read, I become more and more convinced that our present system of water-carriage is a mistake, and was begun in ignorance of the results that would flow from it. It is, moreover, very wasteful, and highly deleterious to public health. I hold with Lord Palmerston that "dirt is merely useful matter in a wrong place," and that, if we would only observe the economy of nature, we would find there is no loss, no such thing as waste; but that, on the contrary, what is superfluous in one order of organized nature is food for another.

Thus, we see that the secretions given off by animals involuntarily are utilized; as, for example, the carbonic acid given out so abundantly by animals is absorbed by plants. Some secretions, however, are left under our own control, and in the disposal of these we experience great difficulty, simply, as I believe, because we do not adopt the method pointed out to us by nature. Earth being the original parent, everything taken from it should be restored to it again—the true rotation is, from earth to plants, from plants to animals, and from animals back to the earth again. We have not followed this rotation of nature, and hence all our difficulties have arisen.

Those excretions which have a high commercial value, and would materially assist in enriching our land, we have passed into our rivers and streams, rendering these in many places nothing better than cesspools.

I adduce in proof of this, the condition of three rivers—the Thames, the Tyne, and the Clyde. On both banks of the Tyne there are a vast number of chemical works; I am told that 45 per cent. of all the alkali made in Britain is manufactured there, and that the manufacturers are in the habit of passing the refuse matter into the river in a much more acid state than elsewhere; yet, three years ago, I saw salmon passing quite freely to the upper reaches of the river.

In 1847, an Act was passed compelling all the privies, etc., of London to be drained into the river, and we all know how soon it became foul. On the Clyde we have plenty of chemical works, but in Glasgow alone about 32,500 water-closets; and I think it is a fair inference to deduce, that these are the chief causes of the pollution of the river. Salmon passed freely up until the rapid introduction of water-closets.

All organic matter, *i.e.*, matter capable of putrefaction, is injurious. I shall only give one instance of this sort of nuisance, viz., pot ale from distilleries. Mr Smith tells me that from one of these distilleries there are 500,000 gallons per week, each tun of which contains organic matter to the value of 3s. 6d. a tun. Now, if a law was passed, excluding all organic matter or refuse from the sewers, it would compel the proprietor of this distillery to make a large revenue from what he now wastes, and by which he creates a nuisance.

The question arises, Is the condition of rivers, when loaded with organic refuse in a state of putrefaction, injurious to health? Bad as they are, and utterly shocking in an æsthetic point of view in summer, I really do not think that they are so. The question has been often discussed, but I have never yet heard anything going to prove that rivers in this state were hurtful to health, neither do we find that the diseases which proceed from excremental pollution prevail in the neighbourhood of rivers which are thus befouled. I should like this to be distinctly and clearly borne in mind by those gentlemen who take an interest in sanitary matters, because if they look merely to the purification of rivers, the result will be unsatisfactory, inasmuch as though the rivers *were* rendered quite pure, there would be no gain as regards the health of the community. I hold, that if we wish to purify our rivers, diminish the death-rate, and improve the health of the water-closet towns, we must stop the decomposition of excreta and other organic matters in the sewers, from which gases capable of producing disease arise.

Fresh excreta are not injurious to health, it is only when they decompose that they are so; and the most favourable circumstances to facilitate this are, that they should be placed in narrow passages, with a limited supply of air and water.

In a word, our cesspools and sewers are ingeniously-contrived chemical laboratories for the production of sewer-gas.

I wish I could bring to the surface, and exhibit to you in all their hideousness, the sewers of any large city. We should find them of great variety, viz., old water-courses arched over; and the sewers, some circular, some oval, and, I fear, still some square. At the bottom of most of them we should find a thick, blackish, tenacious mud, and flowing over it a dirty, sluggish stream, slowly, silently, yet continually giving out sewer-gas. Sinking the sewers to their unsightly bed, let us look at the manner in which they are connected with our houses by water-closets more or less out of repair, and more or less imperfect, some of them being merely pipes, with no pretence of a pan, passing directly into the sewers, and thus becoming a source of danger. Another source is by means of fixed basins or sinks, some of them in our bedrooms, and within a few feet of our beds.[1]

I may be told, perhaps, to trap and ventilate the sewers, but, of course, if we trap in one place we but leave more to escape in another; in fact, this would only be to exclude a poisonous gas from our own houses that might find its way into our neighbour's, who, perhaps, might not be so well protected. Ventilation is not easy, and is very costly. Mr Bazalgette estimates that the ventilation of the sewers in London would cost £460,000, with an additional annual expense of £201,480 for fuel, exclusive of labour; flushing with water would cost £381,250.[2]

Supposing that we have trapped our sewers, and carried a ventilating pipe to the roof, we have not destroyed the poison, but merely diluted it. Instead of passing into our houses, it passes over them, and must have an injurious and lowering influence on the health of the surrounding inhabitants, the air being thus more or less contaminated.[3]

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[1] When talking over this subject with the late Sir James Simpson, he told me of a row of houses which, by way of being *improved* (?), had sinks placed in them. Typhoid fever had up to that time been unknown in these houses, but very soon afterwards it broke out, and passed through the whole range.

[2] More than three years ago, I made a proposal to ventilate the sewers of Glasgow, by having them connected with the furnaces of some of the numerous public works in that city, which could have been done with very little cost.

[3] To show how slight a contamination of air will produce disease, allow me to mention a case which came under my own observation a few weeks ago. A youth was fishing for, and caught two trout; fourteen days afterwards (period of incubation) symptoms of typhoid fever appeared. His father, a most observant and intelligent medical man, remembered that a sewer, entering the stream near where his son had been fishing, had been opened for repair at the time; therefore, although the sewerage was not strong enough to kill the trout, the atmosphere was so tainted that its inhalation produced typhoid fever. I made particular inquiry into this case, and found that the youth had not drunk any of the water of the stream; neither, so far as was known, had he been in any other way exposed to the result of excremental pollution.

This sewage gas is always being formed, is generally lighter than air, and frequently hotter. It follows that it must often be in a state of tension, that it will ascend, and, if possible, escape at the highest point. When it does so into the streets, if the outside temperature is very low, we shall see the watery vapour condensed like steam.

Many people rush quickly past these sewer gratings in a cold winter day to avoid the pestilential vapour, and greatly pitying the poor people who are obliged to live in such a neighbourhood; never suspecting that the very same vapour may be entering their own houses, although invisibly, owing to the higher temperature within.

It may be asked, How can this gas get into our houses if the water-closets are in perfect working order, and the drains in good condition and well trapped? I answer, that it is not easy to trap the drains thoroughly. People imagine that if they have a few inches of water in a bent tube, dignified by the term "syphon trap," that no air can pass into their houses from the sewers; and certainly there will not, so long as the pressure is equal on both sides of the water in the bent tube. But if rain rapidly fills the drain with water, or if the drains open into a tidal river, at the time of high water there is a great pressure on the air in the sewer, and it forces its way into our houses through any trap that has yet been invented. The gas being in a state of tension will escape as the barometer falls. In familiar illustration of this, we sometimes hear people predicting rain from perceiving a disagreeable odour; and correctly so—the falling atmospheric pressure being the precursor of rain as well as the liberator of the sewer-gas.

This contamination of air in sewers will vary in different localities and at different seasons of the year. Generally the amount of oxygen is diminished; and we find as impurities in air from sewers —carbonic acid, light carburetted hydrogen, sulphuretted hydrogen, and fœtid organic matter, which last is probably the principal cause of the extreme unhealthiness of sewer air. At the Sewage Conference at Leamington, one of the most philosophical physicians (Dr Benjamin Richardson) gave a list of fifteen diseases that may all pass from, or be conveyed by, sewage.[1]

When we look back to the epidemics of the middle ages and some centuries ago, we readily acknowledge that, if they were not directly caused, they were enormously aggravated, by the habits of the people. If any of these epidemics reappear, why should we not attribute it to the same cause? We are given to congratulating ourselves on having, by our improved sanitary arrangements, got quit of the plague, sweating sickness, etc., etc.; but if some bypast and long latent epidemic reappears, why should we not look to the same cause as before as its probable generator? or why should we not inquire if some of our present and most fatal epidemics may not be produced by, or owe their intensity to, a similar origin?[1]

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[1] Dr Richardson's Table of Diseases from Organic Poisons :—"The diseases which may be produced by the organic poisons are as follows:—Smallpox, measles, scarlet fever, diphtheria, typhus fever, typhoid fever, erysipelas, hospital fever, puerperal fever, cholera, yellow fever, ague, glanders, boil and carbuncle, infectious ophthalmia. This is a long list of diseases, amounting to fifteen in number, mainly traceable to the poisons which, as I have said, may pass from the sewage."

Mr Simon very pertinently asks why diphtheria, which scarcely had a place in history till it overran Europe in the sixteenth century, and which since then has scarcely been spoken of, should recently have become an important disease in England?[2]

The answer to Mr Simon's question is simply this:—We have been careless in the disposal of our excretions, and have been drinking water or breathing air contaminated with excretal matter in a state of decomposition. For details proving this, as regards outbreaks of diphtheria, I refer to the Second Report of the Medical Officer of the Privy Council—see pages 167, 168, 171, 172; and in the Eighth Report, page 251. Typhoid fever, killing in England 15,000 to 18,000 people annually, is another disease resulting from excremental pollution.

All modern investigators agree in this; and there is seldom a week but in one or other of the medical journals we do not find an account of some outbreak of zymotic disease from excremental pollution.

In the last Report of the Medical Officer to the Privy Council, published a few months ago, I find a table of the places visited by the Inspectors owing to increased death-rates. The total number of places so visited is 66; but 6 of these being double entries, reduces the number to 60; and in 50 of these the increased death-rate was traced to excremental pollution, producing typhoid fever in 49 and scarlet fever in 16 of these infected places.

In most of these cases the water was befouled; but as this is so well known as a cause of disease, and has been so amply proved, I shall not dwell upon it, but rather enter somewhat more in detail on another source of typhoid and other zymotic diseases which is not so well known, and cannot so easily be guarded against.

About fifteen years ago I first detected perforated soil-pipes. At first I merely looked upon them as a nuisance, because offensive, and did not connect them with disease; neither did I then know how these perforations were produced.

In the first pipes I inspected, as the perforations were on the upper side, I imagined that pieces of lime might have dropped down on the pipes and eaten their way through. This opinion I abandoned, as I found the perforations were from within. I also found that they were generally on the upper surface of the pipe, and that, therefore, the destruction could not be caused by fluid conveyed through it. I also observed that the pipe usually affected in this manner was the cross one, leading from the closet to the main descending soil-pipe; and that if there was a bend or arch in the pipe, the upper surface of the bend or arch would become perforated. Another element to be taken into consideration is, that these perforations are most frequently found in the upper flats of houses, and, occasionally, in the sides of the descending soil-pipes.

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[1] It may be mentioned here that cholera did not prevail in this country till after the adoption of water-closets; neither had diphtheria been epidemic for 200 years till we adopted this system.

[2] I append a table, from which you will perceive that there are no deaths till 1851; in that year there were only 40, and till 1857 the numbers varied from that to 310. It then suddenly increased—reaching its maximum, 9587, in 1859. The total deaths till 1868 are 54,872.

The question now arises, How is this destruction of good well-made lead pipes effected?

If we remember the position of this destructive action in the pipes, and take into consideration the results of chemical analysis,[1] as well as the increased rapidity with which this action takes place in pipes that are not ventilated, I think we are justified in coming to the conclusion that these results are owing to the action of sewer-gas. If you will carefully notice the specimens you will perceive that the destructive action is from within, and that in some places the pipes are more or less corroded even where the action has not gone the length of complete perforation (fig. 5).

Of course, my own discovery of such pipes in houses has only been where I have been attending professionally, and where the diseases were of such a type as are known to be produced by breathing the results of the decomposition of excreta. The diseases I have observed as resulting from this state of pipes are typhoid fever, diphtheria, scarlet fever, diarrhœa, etc.; and in one or two cases I have had to order the removal of families who were suffering from ill-health from this poison, without exhibiting symptoms of any well-defined disease. As the investigation of the causation of disease is carried out, I believe that the list already given of those diseases produced or conveyed by sewage will be increased. In two cases of phthisis in people long past middle life, I could not attribute the disease to any other cause. The family history was good, the mode of living correct, and the general health satisfactory up to the time of the soil-pipes becoming corroded (fig. 3).

About three years ago I was asked to visit the child of the super-

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[1] By Mr Stamford's kind permission, I am enabled to give the analysis of the inner coating of these pipes:—

Carbonate of lead, . .	2·70	86·00	91·00	92·90
Carbonate of lime, . .	80·63	2·50	2·10	2·90
Water, ...	0·45	1·20	1·00	0·50
Lead insoluble as oxide, .	—	3·50	1·50	1·45
Silica, ...	1·35	2·80	1·00	1·60
Organic matter, . . .	14·87	4·00	3·40	0·65
	100·00	100·00	100·00	100·00

The analysis No. 1 indicates that probably chloride of lime had recently been used to destroy the effluvia from the already perforated pipes.

intendent of a large public institution. I at once suspected typhoid fever, which proved to be the case. I was, moreover, told that it had twice already been in this gentleman's family; and that the year before the whole family had suffered from diphtheria. On making inquiry as to the state of the drainage, water-supply, etc., I was told that the water was Loch Katrine, and so beyond suspicion. The master of works for the institution was a most intelligent man, who had paid special attention to the drainage. He had soil-pipes with extra depth of traps, indeed the deepest I have seen, and it was difficult to account for the manner of infection, the pipes being pronounced free from any defect; but, in a short time, another child was seized, as well as several of the officials of the institution. In passing a particular spot in the superintendent's house, however, I perceived a faint odour of sewer-gas; and, on mentioning this to him, he most promptly had the pipes uncovered, and perforations were at once discovered in the vertical soil-pipe.[1] This led to a complete overhaul of all the pipes in the house, and the removal of those that were defective; and since then I have not heard of a single case of typhoid or diphtheria in the establishment. Plumbers do not readily detect this defective state of pipes, as they look for a liquid leakage. Some time ago, in visting a case of typhoid, I asked the mother of my patient as to the state of the closet and pipes. She replied, "Oh, Doctor, you are wrong this time; all these things were renewed only two months ago." Of course I was extinguished; but still ventured to inquire what might be the cause of a very perceptible, and by no means agreeable, odour. A dead rat was suggested as its possible origin. However, as it was no matter to trifle with, I requested that the plumber might be sent for, and also that he should be told that the soil-pipe close to the cross-pipe was eaten away (fig. 6).

At my next visit, the lady told me that the plumber had been very much astonished to find the pipe exactly in the state I had predicted. I now exhibit the pipe. I have been told that this state of pipes must be peculiar to Glasgow, and must be produced by some chemicals getting into the sewers; but I have made many inquiries, and find the same thing existing in every water-closet town in reference to which I have had information. This, the worst specimen on the table, is from Edinburgh, where there are few chemical works (fig. 6). Lead has generally been used as the material for soil-pipes, and as we have seen how capable it is of corrosion, it becomes a very important sanitary question to inquire how long a good lead soil-pipe will hold out. I have been studying this question for several years, and it is now about five since I first exhibited pipes in public, yet I would not wish to dogmatize on the subject, but rather give approximations, and would remark that the time will vary under the various circumstances according to the strength and rapidity of flow of the sewage, as well as the original thickness of the pipe. But after allowing for this, we must broadly distinguish between soil-pipes which are ventilated and those which are not. By the former I mean when the pipe is carried up to the roof of the house and open to the external air; by the latter I mean when the pipes are closed up. Of these last mentioned, the duration may be stated to be about twelve years, the extremes of variation being from a minimum of eight to a maximum of twenty years.

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[1] I would by no means be understood to say that smell, merely as such, produces disease; it is simply a quality of what in this case does so.

In ventilated pipes the duration may be stated to be nearly double, running from twenty-one to twenty-three years, the extremes of variation being from eighteen to thirty or even more years. The practical sanitary conclusion which it concerns us all to keep in mind is, that any house, no matter how carefully and well built, may become unhealthy from this source, and that when cases of typhoid fever, diphtheria, etc., occur, the pipes should be thoroughly inspected—especially their upper surface—and the whole of the soil-pipe uncovered.

I must strongly insist on this, as in many cases the plumbers have declared the pipes to be all right, which turned out to be very defective when uncovered. For some years back, I have insisted on a careful examination of the soil-pipes wherever I have cases of typhoid or diphtheria, and in every case where I could get this carefully carried out, I have detected these perforated pipes.[1]

What first led me to connect this state of soil-pipes with disease was the fact that, as regards water-supply, Glasgow should not be exposed to diseases resulting from excremental pollution; and if we have these diseases, we must attribute them to some other source.

Another way in which sewer-gas may act injuriously, is by its passing up the waste-pipe of the cistern, and becoming absorbed by the water. In houses that have been shut up for a few months, this should be guarded against by running off all the water, and clearing out the mud at the bottom of the cistern, before the houses are re-inhabited. I also propose to insert into the waste-pipe a long wire cage with a circular head, and to keep this filled with seaweed or other charcoal, which should be replenished from time to time (fig. 4). Of course it would be much better if all water used for cooking or drinking were drawn direct from the main.

It would prolong the duration of the pipe, and be an important sanitary improvement, if the soil-pipes were in every case carried up to the roof, and left quite open to the air. The expense of this would be more than compensated to the landlords by the greatly-increased duration of the lead pipes.

Another group of diseases arising from excremental pollution are the diarrhœal, including cholera. I need not, I think, insist that this last disease is the direct consequence of taking into our system the results of excremental pollution. Instead of going into any proof of my own as to this, I shall quote from the admirable and vigorous language of Mr Simon. In the Eighth Report, page 39, he thus writes:—"When cholera is epidemic in any place, persons who are suffering from the epidemic influence, though perhaps with only the slightest degree of diarrhœa, may, if they migrate, be the means of conveying to other places an infection of indefinite severity; but the quality of infectiveness belongs particularly, if not exclusively, to the matters which the patient discharges by purging and vomiting from his intestinal canal; that these matters are comparatively non-infective at the moment when they are discharged, but subsequently, while undergoing decomposition, acquire their maximum of infective power; that choleraic discharges, if cast away without previous disinfection, impart their own infective quality to the excremental matters with which they mingle in drains or cesspools, or wherever else they flow or soak, and to the effluvia which these matters evolve; that if the cholera contagium, by leakage or soakage from drains or cesspools, or otherwise, get access, even in small quantity, to wells or other sources of drinking water, it infects in the most dangerous manner very large volumes of the fluid; that in the above described ways, even a single patient with slight choleraic diarrhœa may exert a powerful infective influence on masses of population, among whom, perhaps, his presence is unsuspected; that things such as bedding and clothing, which have been imbued with choleraic discharges, and not afterwards fully disinfected, may long retain their infectious properties, and be the means of exciting choleraic outbreaks wherever they are sent for washing or other purposes."

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[1] Except in one case, where the patient had only returned a few days previously from the country, and where I found, from making inquiry, that the water in the country house was impure.

Again, in Report Ninth, pages 33 and 34, Mr Simon thus powerfully writes:—"It cannot be too distinctly understood, that the person who contracts cholera in this country is, *ipso facto*, demonstrated with almost absolute certainty to have been exposed to excremental pollution; that what gave him cholera was (mediately or immediately) cholera-contagium—discharged from another's bowels; that, in short, the diffusion of cholera among us depends entirely upon the numberless filthy facilities which are let exist, and specially in our larger towns, for the fouling of earth, and air, and water, and thus secondarily for the infection of man, with whatever contagium may be contained in the miscellaneous outflowings of the population. Excrement-sodden earth, excrement-reeking air, excrement-tainted water—these are for us the causes of cholera. That they respectively act only in so far as the excrement is cholera-excrement, and that cholera-excrement again only acts in so far as it contains certain microscopical fungi, may be the truest of all propositions; but whatever be their abstract truth, their separate application is impossible. Nowhere out of Laputa could there be serious thought of differentiating excremental performances into groups of diarrhœal and healthy, or of using the highest powers of the microscope to identify the cylindro-tænium for extermination. It is excrement indiscriminately, which must be kept from fouling us with its decay.

"The local conditions of safety are, above all, these two—(1) that, by appropriate structural works, all the excremental produce of the population shall be so promptly and so thoroughly removed, that the inhabited place, in its air and soil, shall be absolutely without fæcal impurities; and (2) that the water-supply of the population shall be derived from such sources, and conveyed in such channels, that its contamination by excrement is impossible."

"It is to be hoped that, as the education of the country advances, this sort of thing will come to an end; that so much preventable death will not be always accepted as a fate; that for a population to be thus poisoned by its own excrement, will some day be deemed ignominious and intolerable."

As regards diarrhœa, Dr Greenhow reports, and Mr Simon endorses his opinion, that the deaths from this cause vary from 4 in every 100,000 of the population, to 663 in the same number. He calculates that if the diarrhœal death-rate could be restricted in the whole of England to ten times the minimum death-rate of 4, there would be a saving of 20,000 lives annually, and there would be a great reduction in the deaths from typhoid fever also. Both Mr Simon and Dr Greenhow are of opinion, that the excess of mortality from these diseases has in all places been coincident with one or other of two definite local circumstances: (*a*) the tainting of the atmosphere with the products of organic decomposition, especially of human excrement; or (*b*) the habitual drinking of impure water.

Before turning our attention to remedial measures, allow me to remark, that water-carriage was adopted in ignorance of the results that would flow from it. It was known that water and air oxidize excreta, and it was supposed that we had nothing more to do than merely to pass these matters into streams to be rid of them. The result has amply proved that no river in the kingdom can oxidize the excreta of the towns on its banks. We have had our rivers rendered gigantic cesspools; and though many schemes have been proposed for the treatment of sewage, most of them have failed when brought to the touchstone of scientific research.

The plan of sewage irrigation has many advocates, and therefore I shall offer a few remarks upon it. No doubt it would in some degree utilize the sewage, but it would not in the least improve the sanitary condition of water-closet towns. Its advocates assert that it will carry the excreta *fresh* to the soil, in refutation of which I shall simply advert to the case of Croydon.

I do so, *first*, Because it is a very perfect specimen of sewage works carefully carried out under the most favourable circumstances; *second*, Because the advocates of sewage irrigation insist that the excreta ought to be carried *fresh* to the soil; and, *third*, Because the engineer tells us that the time from the closet, through the drains, through the straining-beds, and out again into the river, varies from a minimum of four to a maximum of six hours.

If this is correct, it follows that at Croydon there should be no gas, it being a well-known fact that excreta take at least twenty-four hours to decompose and give off gas.[1] At Croydon, then, there should be no need of sewer ventilation, yet Dr Carpenter, who highly approves of the system pursued there, tells us that from some mal-arrangement of the pipes in his house, sewage-gas passed into it, with a force resembling the escape of steam, and produced typhoid. As recently as the 6th of this month (January), I see there is a letter from him in the *British Medical Journal*, giving an account of an admirable method adopted in Croydon to destroy sewer-gas by charcoal. From this it is evident, *1st*, that the excreta are *not* passed on fresh to the land; *2d*, that it must take much longer than the theoretical time to pass from the closet, through the pipes, and over the meadows. I suppose the mistake may have in part originated in supposing that sewage matter will flow as rapidly through pipes as pure water; but if we have sewer-gases at Croydon, with its recently and admirably constructed sewers, and their favourable fall, what would we have if we attempted sewage irrigation in towns less favourably situated, where the drains are not nearly so well constructed, far more numerous and complicated, and where we might find it necessary to pump the sewage? Another objection to sewage irrigation is, that if the sewage is pumped, in all probability the liquid will be pumped up and the gas left. This was confirmed by the results of drainage works in twenty-five towns in England. In nine of them there was a reduction of more than 50 per cent. in the cases of typhoid; in ten, a reduction of from one-half to one-third per cent.; while in four, there was either a slight decrease or an absolute increase. In these four, the sewage was pumped. It was quite expected that as drainage works were carried out there would be a diminution in zymotics, but experience proves that it has also a favourable influence as regards phthisis. In fifteen towns there was a reduction of deaths from this source of from 49 to 11 per cent. No large city has yet adopted the process of irrigation for the whole of its sewage, and in places where it has been adopted the Birmingham Report complains that it is very difficult to get an account of the financial results.—(Birmingham Report, p. 69.)

The latest estimate allows one acre for every 20 to 30 of the population, and at such a rate you can easily calculate how many acres a city like this would require. To meet this difficulty, intermittent downward filtration has been proposed; but as by it the greater part of the manurial value is lost, I shall not enter upon it.

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[1] I wish it to be understood, that I do not speak as to the present state of Croydon; I am dealing with a much larger subject, and merely quote Croydon as an illustration in point. I make this remark, because when I used it on a former occasion I was misunderstood, and told that because Croydon is healthy now, I had no right to refer to it.

The most fatal objection to irrigation, and indeed every other scheme for the treatment of sewage, is that they do not meet the sanitary difficulty. Before the sewage is taken to the land or submitted to any of the numberless patent schemes, the whole mischief has been done, while experience has also amply proved, in regard to water-carriage, that no river in the kingdom can oxidize the excreta from the towns on its banks. Our engineers stick to water-carriage, however, with a tenacity which is most surprising,—simply, I suppose, because they are engineers, and do not know, or will not study, the other aspect of the question; yet, Mr Hawksley (Birmingham Report) says, that while the art of removing excremental refuse in water has been brought to perfection, the problem of the re-purification of the polluted waters remains unsolved. This being the case, it seems rather wonderful that engineers do not think it worth while to try other methods. The views I bring before you to-night I have long held. This paper was proposed to be read before the Prince of Wales's illness, and would have been read last month had there been an open night. I may mention that I brought the same views before the public five years ago at a Glasgow Sewage Association; three years ago I did the same at the Medico-Chirurgical and Philosophical Societies of Glasgow; and I also read papers on the subject at the Social Science meetings of Newcastle and Leeds; but in no place did I make many converts as to the evils arising from sewer-gas.

The illness of the Prince has recently galvanized many people into the greatest excitement on the subject, but I fear the effervescence may as speedily subside, and nothing be done—that we shall still go on acting contrary to nature's laws, and have the results I have been trying to point out.

In London alone, according to Mr Krepp, thirty millions of money have been spent on water-carriage—we all know with what disappointing results in a sanitary point of view.

These matters, which pollute our rivers, poison our air, and produce disease to so lamentable an extent, are of great value. I believe that £80,000 is a very moderate estimate of the value of the excreta of this city, yet we throw them away, and then ransack the whole earth for bone-dust and guano.

Sanitary science should not rest content till it has made towns as healthy as rural districts—this, at least, should be the result aimed at; and this we shall never be able to do until there is a change in the mode by which excreta are disposed of.

If cholera were epidemic in any place, I have no doubt that every intelligent officer of health would direct that the stools of all patients should be disinfected. Very probably, however, before this was carried out, the mischief would be done by the cholera contagium getting into the sewers or wells.

Why, then, not provide for such an emergency beforehand, by reserving the sewers for the rainfall, and making provision that all excreta shall not be allowed to decompose, but be disinfected,—the progress of what we may term antiseptic chemistry rendering this less and less difficult? I sum up as follows:—

1st, That no excreta shall be allowed to pass into our sewers, water-courses, or rivers.

2d, That all refuse from manufactories containing organic nitrogen and carbon—*i.e.*, putrescible matter—shall also be kept out of our sewers, water-courses, and rivers.

3d, That all excreta shall be submitted to chemical or other action, by which they shall be rendered non-putrescible.

As regards the second point, we would require imperial legislation to prevent organic refuse from being passed into the sewers, etc.; but I think the first and third might be carried out under the powers in the Police and Public Health Acts; and I am quite sure that the gain would, in a short time, exceed the expenditure. I am often told it would be very difficult to carry out these views, but everything really worth having is attended with difficulty, and I cannot but affirm that if a tithe of the time, skill, and ingenuity, and one-thousandth part of the money, had been devoted to investigations in this direction, which have been spent on water-carriage, the problem would have been solved long ago.

I have already said that the numberless patents which have been taken out do not meet the whole case: they either fail in the sanitary—*i.e.*, do not prevent decomposition in the sewers; or in the economic—*i.e.*, do not retain or recover all the fertilizing matters.

I shall therefore enter into no detail as regards them, but bring under your notice some plans which fulfil the requirements I have specified.

1st, Mr Moule's earth-closet is known to most of you, and has done well in private houses, asylums, and small villages in this country; and in India has been a very decided success. The great objection to its use in towns is the bulk of the material required. This objection is removed by employing, as Mr Stanford proposes, seaweed charcoal instead of earth. As a very small quantity of charcoal is sufficient, by an improved closet, it is expected that even less than weight for weight of excreta will be found sufficient. I have repeatedly seen Mr Stanford's process in operation, and am convinced it is in every way well worthy of trial; as it satisfies, in all respects, whatever the most ardent sanitarian could desire. The product from the closet is a black mass, somewhat like cinders, free from smell, and without the least appearance of fæcal matter. Mr Stanford considers that eight cwts. per head per annum is sufficient, and that this need only be removed once a year; and the reservoir of char at the top of the house need only be replenished once a year. The closets are arranged to be quite automatic, and require no attendance from within. Mr Stanford values the char after use at 8s. a head per annum, and proposes to burn it in revolving retorts, and to collect in suitable condensers the gas liquor, tar, and gas. The charcoal increases at each reburning, and therefore the plan is self-supporting, unless, indeed, the increased value of the char should render it advisable to sell it.

Mr Stanford's proposal has been so well thought of that a company has been formed to work it, and the large shipbuilders on the Clyde have agreed to adopt it; and I am also told that already arrangements have been entered into to provide closets for works employing 12,000 men.

Captain Liernur proposed some time ago what he terms a pneumatic system of collecting the excreta, and applying it direct to the soil. The great objections to his scheme were that it would require a special plough—that we would require to be always ploughing, or the matter would accumulate, and that if frost came we would be necessitated to cease putting it into the ground.

When a community has been accustomed to water-closets, it is very difficult to get any alteration made, and therefore some schemes have been devised to retain the water-closet, but to prevent the matters from them getting into the sewers.

Mr Strang proposes an upward system of filtration. His apparatus consists of a large box, divided by a perforated bottom, the upper division being filled with cinders, ashes, or charcoal. The lower division receives the contents of the closets; as it fills the water rises through the perforated bottom, passes upwards, and flows off at the top much purified. From time to time the contents of the lower division are removed, and are of considerable value.

Mr Hoey has devised an apparatus which is intended to leave us with all the comfort and convenience of the water-closet, and yet at once to get quit of all the nuisance and dangers of that system.

It is not easy to describe mechanism without drawings, but I shall try and give some explanation of Mr Hoey's plan.

First, The water-closets are left just as they are at present.

Second, The flush-pipe is not attached to the general cistern, but to one holding only one-fifth of a gallon of water, which takes two minutes to fill. When the bar of the water-closet is raised, the supply to this small cistern is cut off, so that it is almost impossible to waste water—it could only be wasted by some one raising the bar every two minutes.

Third, A vessel like a bird-cage fountain is filled with sulphuric acid, and at each time the closet is used a portion of it is discharged with the water by means of a plunger dipping into the acid.

Fourth, The waste-pipe from the closet flows into a reservoir underground, from which the excreta are removed by pneumatic pressure without the slightest offence, and then taken to the country to be evaporated into portable manure.

Instead of the sulphuric acid, I would propose the use of common salt, to which my attention was directed by the researches of Dr Angus Smith. You will find salt very favourably spoken of in his work on Disinfectants, at page 78. At page 128, he tells us that it is seven times cheaper than chloride of lime, and fourteen times cheaper than carbolic acid; and at page 97 we read what was the effect of only two ounces on one cwt. of human excrement. The great advantages of salt are its cheapness, its thorough efficiency, as well as its being itself a valuable fertilizer of soil, and amply repaying the agriculturist for his outlay.

I would recommend the removal of the product of the closets by pneumatic pressure, without in the least disturbing the inmates of the house. It would be conveyed to an establishment where it would be evaporated to dryness, and converted into a portable, and I have no doubt very valuable, manure.

The advantages of Mr Hoey's plan are obvious. Where water-closets are already in use, they leave our household arrangements as they at present are, and save an enormous waste of water.[1]

Then, as the excreta cannot putrefy, it follows that there need be no fear of sewer-gas getting into our houses, or of fæcal matter percolating through the soil into wells, etc. Either of these plans would at once deodorize and render innocuous the stools of patients suffering from infectious diseases; they are not expensive, and could be as easily worked as our present system; while the collected matter, after the evaporation of the water, would make a valuable manure.

All of these schemes show a profit on paper. I think, however, profit should not enter primarily into our calculations. We ought to take a broader view of the question, and ought to feel that this is a gigantic evil, and it must be got rid of. We must not go on living contrary to the laws of nature, lowering our health by breathing impure air, wasting our manure, swelling our death-rates, and robbing posterity.

I do not say which of these schemes is best, or that any of them is perfect; but they are all superior to our present system of water-carriage, and it would well become the authorities of any large com-

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[1] To test the powers of this limited supply of water to keep a closet clean, I had one fitted up in my own house, with a cistern only containing $\frac{1}{8}$ of a gallon of water.

It has now been in use for more than two years, and is quite as clean as others in the same house where the supply is unlimited.

If such a closet was generally adopted, there would be a saving of water of several gallons a head.

Mr Hoey tells me that the expense of altering a water-closet to suit his apparatus would be 13s., and that two guineas would be the amount required to put in a tank for six closets, making the expense for each about 7s.

As regards the utilization of the matter from such a closet, I may mention that Mr Chapman has bought the urine from the public urinals of Glasgow from the Police Board for £1000 a year; and he tells me that if the excreta are diluted with not more than four times their bulk of water, he can utilize them. He has already fitted up extensive works for the treatment of the urine.

munity to have them tried, and to prove for themselves whic
best.

In conclusion, let me emphatically say, that the only true s
tary solution of this question is that all excreta must be kept
of our water-courses and rivers—nay, I go further, and affirm
if it is true, as Dr Benjamin Richardson tells us, that fifteen org
poisons may pass from sewage—if it is true that diarrhœa, chol
and enteric fever (the first and last killing 35,000 per annum),
traceable to the imbibition or inhaling of the results of decompos
excreta—if it is true that the same causes lower the health
swell the death-rate from other diseases—then I say, that the o
satisfactory solution of our difficulty will be found by making p
vision that all excreta shall, within twenty-four hours of being void
either be returned to the earth, or shall be subjected to chemi
processes before decomposition takes place.

TABLE *showing the* NUMBER *of* DEATHS *in* ENGLAND *from certain* ZYMOTIC D
EASES, *in each Year for which the Record has been made, from* 1838 *to* 186
which may be read along with Dr Richardson's List of the Organic Pois
(*p.* 720).

Years.	Scarlatina.	Diphtheria.	Measles.	Hooping-Cough.	Smallpox.	Fever.	Diarrhœa, Dysentery, & Cholera.	Total.
1838	5,802	...	6,514	9,107	16,268	18,775	3,440	59,906
1839	10,325	...	10,937	8,165	9,131	15,666	3,493	57,717
1840	19,816	...	9,326	6,132	10,434	17,177	4,799	67,684
1841	14,161	...	6,894	8,099	6,368	14,846	4,198	54,566
1842	12,807	...	8,742	8,091	2,715	16,201	7,622	56,178
1847	14,697	...	8,690	9,260	4,227	30,994	15,630	83,498
1848	20,502	...	6,867	6,862	6,903	22,037	15,604	78,775
1849	13,111	...	5,464	9,615	4,645	18,347	74,155	125,337
1850	13,370	...	7,080	7,770	4,666	15,375	14,400	62,661
1851	13,594	40	9,370	7,905	6,997	17,930	18,045	73,881
1852	18,813	74	5,846	8,022	7,320	18,641	21,754	80,470
1853	15,653	46	4,895	11,200	3,151	18,554	20,502	74,001
1854	18,325	203	9,277	9,770	2,808	18,893	42,092	101,368
1855	17,128	186	7,354	10,185	2,525	16,470	15,044	68,892
1856	13,931	229	7,124	9,225	2,277	16,182	15,912	64,880
1857	13,919	310	5,969	10,138	3,936	19,016	24,037	77,325
1858	25,481	4,836	9,271	11,648	6,460	17,883	16,004	91,583
1859	19,907	9,587	9,548	8,976	3,848	15,877	20,597	88,340
1860	9,681	5,212	9,557	8,555	2,749	13,012	11,185	59,951
1861	9,077	4,517	9,055	12,309	1,320	15,440	20,999	72,717
1862	14,834	4,903	9,800	12,272	1,628	18,721	12,667	74,825
1863	30,475	6,507	11,349	11,275	5,964	18,017	16,801	100,388
1864	29,700	5,464	8,323	8,570	7,684	20,106	18,366	98,213
1865	17,700	4,145	8,562	8,647	6,411	23,034	25,894	94,393
1866	11,685	3,000	10,940	15,764	3,029	21,104	32,644	98,166
1867	12,300	2,600	6,588	11,873	2,513	16,862	21,735	74,471
1868	21,912	3,013	11,630	9,223	2,052	19,701	32,427	99,958
Totals	438,706	54,872	224,972	258,656	138,029	404,861	539,046	2,190,144

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Table *sh*
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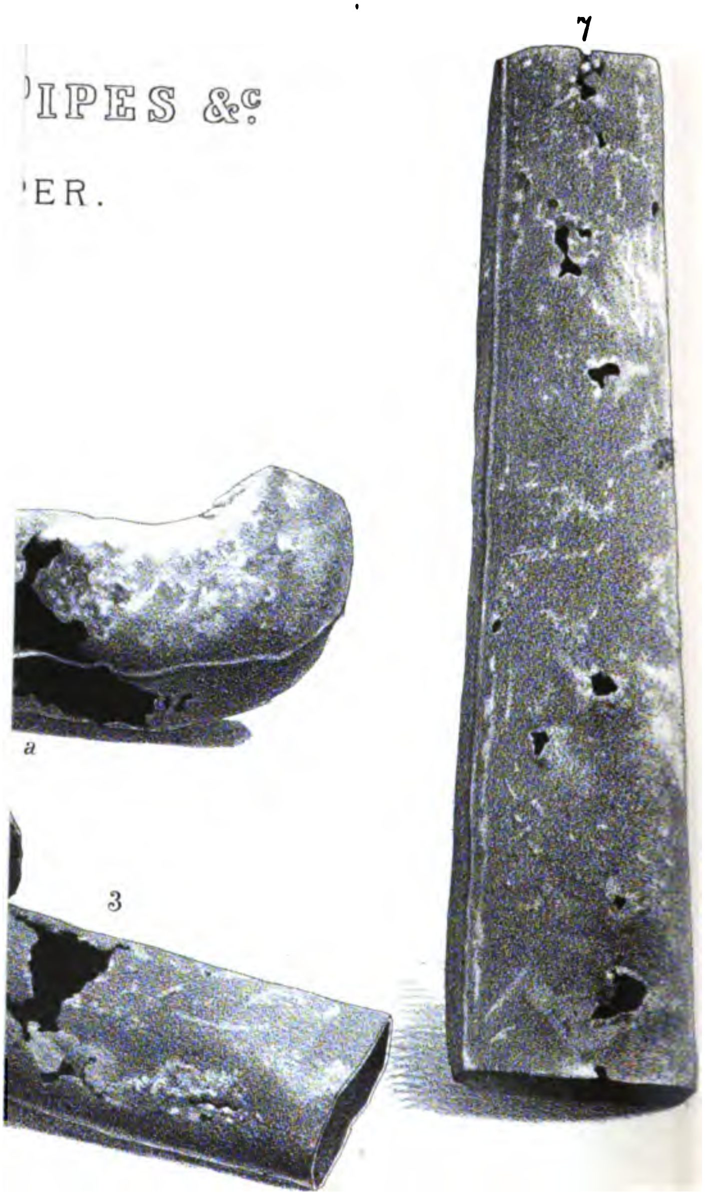
(*p.* 720)

Years.	S
1838	
1839	1
1840	1
1841	1
1842	1
1847	1
1848	2,
1849	1
1850	1.
1851	1
1852	1
1853	1
1854	1
1855	1
1856	1
1857	1
1858	2
1859	1
1860	
1861	9
1862	14
1863	30
1864	29
1865	17
1866	11
1867	12
1868	21,
Totals	438,



DESCRIPTION OF PLATE.

Fig. 1.—Pipe removed from a house where there was typhoid. Two months before it was taken out, the water-closet had been renewed, but the plumber had failed to detect the state of this pipe.—P. 723.

Fig. 2.—A piece of lead soil-pipe slightly corroded, which entered an iron pipe below a water-closet. The iron pipe much perforated, allowing an escape of sewer-gas, which produced fatal diphtheria.

Fig. 3.—Perforated soil-pipe from house where party died of phthisis.—P. 722.

Fig. 4.—Wire cage, filled with seaweed or other charcoal, to put into the overflow pipe of cistern.—P. 724.

Fig. 5.—Soil-pipe laid open, in which, so numerous were the perforations, that very little of the lead required to be cut. The sides *a a*, *a a*, are irregular owing to these perforations, and they may also be seen over the whitish part. The spaces between *a a* and *b b* are the parts of the soil-pipe covered with the whitish deposit spoken of in the paper. The part within the *b*'s is the lower segment of the pipe over which the sewage flowed. It is quite sound—not in the least decayed or worn.—P. 722.

Fig. 6.—Pipe from Edinburgh. It will be noticed that the solder has not decayed, *a*. —P. 723.

Fig. 7.—Main descending soil-pipe, showing the perforations.

Part Second.

REVIEWS.

On the Physiology of Wings. By James Bell Pettigrew, M.D., F.R.S., etc. Trans. Royal Society, Edinburgh, Vol. XXVII. 1871.

Of those who have striven of late years to place the subject of artificial flight on a philosophical basis, Dr Bell Pettigrew is entitled to take precedence, both in point of time and as regards the quantity and quality of the work done. To this investigator is due the discovery of the celebrated figure-of-8, or wave theory of flight, which has been exciting so much attention on the Continent and in America. Dr Pettigrew has been labouring with indefatigable zeal in this difficult department of science since 1865, and has supplied data which no one but an accomplished anatomist and physiologist could possibly have furnished. There can, we think, be no doubt that he has at length struck the true note, and that the Gordian knot of a most mysterious but delightful subject is in a fair way of being untied, once and for all, for the benefit of posterity. As early as 1867, Dr Pettigrew gave his novel theory to the world in an evening lecture, delivered at the Royal Institution of Great Britain. On that occasion (*vide* Proc. Roy. Instit. of Great Britain, 22d March 1867) he pointed out the interesting fact that the wing was a screw *structurally* and *functionally;* in other words, that the wing when at rest was *twisted upon itself*, and that when it was made to vibrate or reciprocate it *twisted and untwisted figure-of-*8 *fashion.* The wing was shown to be as effective in water as in air, and the tail of the fish was represented as lashing from side to side, after the manner of an oar in sculling. In June of the same year (1867), he read a memoir on the subject to the Linnæan Society of London (Trans. Linn. Society, vol. xxvi.), in which he described, figured, and compared the movements made by the fins and tail of the fish, and the wing of the bird in flying and diving. These movements, he showed, were *reciprocating movements*, produced by helicoidal surfaces, which were mobile and plastic, and acted at a great variety of angles, so as to obtain a maximum result with a minimum of power, and, what is not less important, with a minimum of slip. The fish was represented as throwing its body into figure-of-8 curves in swimming, and the wing of the bird into similar curves in flying and diving—the figure of 8, when the animals were progressing at a high speed, being opened out or unravelled to form *first a looped, and then a waved track.*[1] The following quotation from his memoir will explain the relation:—"The water and air are acted upon by curve or wave pressure, emanating in the one instance from the body of the fish, and in the other from the wing of the bird—*the reciprocating and opposite curves* into which the trunk and wing are thrown in swimming and flying, constituting, in reality, *a mobile helix or screw*, which, during its action, produces the precise kind and degree of pressure adapted to fluid media, and to which they respond with the greatest readiness." He also contrasted the screw formed by the wing with that at present employed in navigation; and showed that the latter, which is *rigid*, cannot be compared in point of efficiency with the former, which is *flexible and elastic.* The rigid screw of the ship is made to revolve, the one blade following the other in rapid succession, and all striking at a given angle which never varies. One blade, as a consequence, virtually performs all the work. From the fact that the one blade, which may be taken to represent the whole, moves in only one direction (it revolves round a given axis), it cuts out as it were the portion of water which corresponds with its area of revolution—a circumstance which greatly increases the slip, while it correspondingly diminishes the actual propelling power of the screw. It is otherwise with the screws formed by the tail of the fish and the wings of flying animals. These are *flexible and elastic*, and, when they are made to vibrate, they are also made to reverse the direction of the stroke, and reciprocate in such a manner that the stroke from above downwards, or from right to left, as the case may be, is made to produce a current, which being met by the wing or when it makes a counter stroke from below upwards, or from

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Nearly two years after Dr Pettigrew wrote, Professor Marey, of Paris, ined similar results by the aid of the sphygmograph; and since then M. cal, M. de Fastes, M. Ciotti, and others have been labouring in the same These investigators have confirmed Dr Pettigrew's original hypothesis, s we are aware, have added no new facts.

left to right, greatly augments the propelling power. This holds true of every successive stroke made by the wing or tail. This power is further augmented by the elasticity and flexibility which contribute to the continued play of the natural screw, and by the fact that the wing of the bird and the tail of the fish strike at a great variety of angles—this peculiarity enabling them to diminish the slip to a minimum and to increase the propelling power to a maximum. Dr Pettigrew arrived at these results from a careful study of the extremities and travelling surfaces of a large number of animals fitted by nature for moving in water and air, and from numerous experiments with artificial fish-tails, fins, and wings, which he made to vibrate with steam by a direct piston action. Continuing his researches, Dr Pettigrew presented a second memoir on the subject to the Royal Society of Edinburgh, on the 2d of August 1870. This is published in vol. xxvii. of the Transactions of that Society, and in it he gives the details on which the conclusions arrived at in his first memoir were based.[1] It is with the latter we have more particularly to deal at present; but as a knowledge of the first memoir is requisite for comprehending the second, it was necessary to direct the attention of the reader to it before proceeding to a review of the other. The memoir now published in the Transactions of the Royal Society (vol. xxvii.) promises to be the most important of Dr Pettigrew's many important researches. In it he grapples boldly with one of the most abstruse problems at present before the world. He, however, proceeds so cautiously, and is so full of resource, that, as already stated, he bids fair to solve it. His present memoir is divided into two parts—the first treating of natural flight as observed in the insect, bat, and bird; the second, of artificial flight, as advocated by Borelli, Strauss-Durckheim, Chabrier, De la Landelle, Wenham, Stringfellow, Marey, himself, and others. We are at a loss to say which is the more interesting part. Dr Pettigrew takes nothing for granted. He goes to nature and abstracts her secret without the intervention of any third party. In this he forms a striking exception to the great mass of authors who are content simply to *compile*. Neither does he bow to the dust of antiquity nor the glitter of great names. He differs as widely from Borelli, who wrote nearly 200 years ago, as from all those who have written since. He, however, curiously enough, shows that almost all that was known of flight, until quite recently, is traceable to that illustrious physiologist and mathematician. Indeed, he translates Borelli's antiquated Latin into very readable English, and proves that the modern French school is entirely indebted to him for what it knows of natural and artificial flight. The parallel passages, written in 1680 and 1869, although in different languages, are certainly referable to the same head. The authors who have treated of flight since the time of Borelli till the present, are criticised in a fair, candid spirit: what is good is commended; what is doubtful, challenged. Dr Pettigrew shows that the wing acts as a kite both during the down and up strokes, and that it elevates and propels in either case—the rising and falling movements gliding by insensible degrees into each other to form one pulsation; that when the wing rises the body falls, and *vice versa ;* that the wing, when the body of the flying animal is advancing in space, describes *a waved track*, the body describing a similar but smaller wave; that the wing is twisted upon itself when at rest and when in motion; that the blur or impression produced on the eye by it when made to vibrate rapidly is concavo-convex and twisted; that the under or concave surface of the wing, in virtue of its being carried obliquely forward against the air by the body, is effective during both the down and up strokes; that the wing rotates in the direction of its length and breadth as it rises and falls; that it reverses its planes more or less completely at every stroke; that it produces during the one stroke the currents by which it is elevated during the succeeding stroke—the wing literally rising on a whirlwind of its own forming; that the wing is movable and flexible as well as elastic, and capable of change of form in all its parts; that it is forced into waves during its action, and impinges upon the air as an ordinary sound does; that it produces a cross pulsation, the pulsatile waves running in the direction of the length of the wing and across it; that during its vibration it moves on the surface of an imaginary sphere; that the natural wing when elevated and depressed must move forwards; that the movements of the wing are comparatively slow at its root, but very rapid at its tip; that balancing is in a great measure effected by purely mechanical arrangements which operate independently of the will of the animal; that weight is necessary to horizontal flight; that the wing acts upon yielding fulcra; that a regulating power is necessary in flight, the wing being at all times thoroughly under control; that the wing in the bird descends as a long lever and ascends as a short one, the tip of the wing describing an ellipse as it does so; that the wing forms a parachute from which the body is suspended both during the down and up strokes; that the wing of the bird opens and closes as it rises and falls, and has a valvular action; that all wings are drawn towards the body and partly elevated by the action of elastic ligaments, etc., etc.

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[1] These memoirs extend to some 220 pages quarto, and are illustrated by nearly 200 original engravings and woodcuts.

Dr Pettigrew's researches are dual in character. He first carefully describes and figures what is found in nature, after which he proceeds to demonstrate that the structures and movements which he has described and figured may be reproduced artificially. He takes, *e.g.*, a fish's fin or tail, and shows that during its action it lashes from side to side figure-of-8 fashion—the margins of the fin or tail throwing themselves into double or figure-of-8 curves as it does so. He then takes the wing of an insect, bat, or bird, and by placing the creature in certain positions the spectator can clearly trace the figure of 8 made by the tip and margins of the pinion. He, however, goes further. He points out how the tail of the fish and the wing of the bird may be imitated both as regards its structure and function. He, in fact, proves experimentally that the fish-tail and the wing have many features in common, and that propellers formed on the fish-tail and wing model are the most effective that can be devised, whether for navigating the water or the air. To operate efficiently on fluid, yielding media, the propeller itself must yield. Dr Pettigrew has made this point very clear; and in this, we think, he has made a valuable discovery, for there can be little doubt that the propeller at present employed in navigation is faulty both in principle and application.

In the second and concluding part of his memoir, Dr Pettigrew explains that the balloon must henceforth be regarded as an effete scientific toy—its existence having, in his opinion, retarded the science of aerostation; that the inclined plane hitherto employed in aeronautics is *rigid*, whereas it ought to be *flexible* and *elastic*; that the old rigid inclined plane is made to attack the air at one angle and at a uniform speed, whereas it ought to strike the air at a great variety of angles and at a variable speed; that the inclined planes at present in vogue either advance in a straight line or revolve in one direction, whereas they ought to reverse and reciprocate; that the aerial inclined planes at present employed draw a current after them which, being never met, is consequently never utilized; that the artificial fish-tail and wing create the currents on which they mainly depend for support and progress by a peculiar reciprocating figure-of-8 action.

Dr Pettigrew further shows how an artificial insect, bat, or bird's wing may be made to vibrate with a wavy, continuous, reciprocating motion, devoid of dead points, the wing literally floating on the air. He points out how a properly-constructed artificial wing will, when elevated and depressed, inevitably dart forwards in a series of opposite curves, and that by altering the angle of inclination of the wing with the horizon, it may be made to fly upwards and forwards, horizontally, or downwards and forwards—flight, as he explains, being essentially not a vertical but a progressive and almost horizontal movement. He likewise gives directions as to the nature of the forces to be employed in driving artificial wings and propellers. The artificial wings and propellers, he states, are made to resemble the wing of the insect, bat, and bird, or the caudal fin of the fish. They are composed of flexible and elastic material, which varies in thickness, the thicker portions, which are consequently the more rigid parts, corresponding to the root and anterior margin of the wing and the root and lateral margins of the tail of the fish. When made to vibrate or reciprocate, the margins of the propeller formed on the wing and fish-tail model are thrown into double or figure-of-8 curves, from the fact that the propeller twists and untwists during its action. This twisting movement enables the propeller to evade and seize the water and air alternately with wonderful rapidity and power—the efficiency of the propeller increasing in a direct ratio to the velocity with which it is made to vibrate. By adding springs which antagonize each other, the propeller is lashed about with greater facility and with a more continuous play—a similar result being obtained by working the steam expansively.

Time will not admit of our pursuing this fascinating subject farther. Enough, however, has been said to show that Dr Pettigrew has struck out an entirely new path; that his memoir "On the Physiology of Wings" is a model research, unique of its kind, and most honourable to its ingenious and industrious author. It is by far the most complete monograph on the subject in any language. The labour involved in its production is incredibly great; but unless we are much mistaken, the reward will equal the toil, for it appears to us to contain germs which are destined to develop sooner or later into Herculean proportions. This much is certain—no one can pretend to understand either swimming or flying who is not intimately acquainted with Dr Pettigrew's very remarkable observations and experiments. His writings under these heads will, we venture to predict, be standard works of reference for the next half-century.

Clinical Lectures on Diseases peculiar to Women. By LOMBE ATTHILL, M.D., etc. Dublin: Fannin and Co.: 1871.

IT is well known with how thin a disguise of contempt the better part of the medical profession regards those who traffic in ulcers of the womb, displacements or curvatures of the womb, strictures, and many more of the same sort—such as cures of sterility. Dr Atthill has had to go over all these important subjects in his lectures, and we are gratified to notice that he everywhere endeavours to keep to a scientific or quasi-scientific treatment of them; and, in these days, this is no mean praise. Our author evidently feels for something better than a quasi-scientific position; but, alas! it is not to be found as yet in this or any other department of therapeutics. Yet we can at least avoid that horrid form of intestine quackery, so rife among fashionable physicians, which traffics in frightening or amusing ladies—especially those who have fat purses—by prolonged cures of the "womb out of place," of two "ulcers," or of a "severe stricture." The evil done in this way is incalculable, and it is aggravated by the circumstance that the "cures" are attempted often by dangerous modes of treatment. Indeed—apart entirely from quackery or semi-quackery in any of its forms—it is to be observed that the profession seems to have need of some new variation of the apophthegm—That a doubtful remedy is better than none. It is extensively forgotten that a remedy should not be more dangerous than its corresponding disease, and that the circumstance of a dangerous remedy having in addition the character of an *anceps remedium*, does not justify its being regarded as *melius quam nullum*. Dangerous remedies have been long popular in gynækology, while they have greatly gone out of fashion in other departments of medicine. Dr Atthill is generally careful in his practical recommendations, but not always sufficiently so. His treatment of one kind of menorrhagia is scarcely to be classed among doubtful remedies. Patients thoroughly treated as he suggests, will certainly have no more menorrhagia; they may be glad if they have even a uterine cavity left. This kind of treatment reminds us of the "cough no more" lozenges, regarding which it was, we believe, truly said that the patient would never again cough if he only took enough of them. The treatment is one which may have been tried, but which we are pretty sure has never been carried out. Speaking of a granular state of the mucous membrane of the entire cavity of the uterus, our author says:—"Destroy the so-called granulations, 'and endeavour to excite healthy action in the diseased part.' With this view I invariably make use of the strong nitric acid, applying it with extreme freedom to the interior of the uterus."

Second Annual Report of the State Board of Health of Massachusetts. Boston: Wright and Potter: 1871. Pp. 433.

So many reports are published nowadays, that the valuable and interesting matter occasionally entombed within boards of various hues is too apt to escape notice, unless attention be incidentally and extraneously attracted to it. The present blue-book is an apt instance of this—it has lain too long unnoticed, and yet it contains a mass of matter of the very greatest interest in a sanitary point of view.

It will be remembered that, when the water of St Mary's Loch was proposed to be introduced into Edinburgh, one important question which arose was, Whether such a water would not be dangerous, from its action on the lead pipes employed to distribute it? and that several distinguished chemists answered this question negatively on the strength of various laboratory experiments. In 1848 it was proposed to supply the city of Boston with water from Lake Cochituate, which is similar in quality to that of St Mary's Loch; its possible action on lead was then made a subject of inquiry and answered in the negative. We have now before us the results of twenty years' practical experience, and a comparison of that with the results of laboratory experiment is eminently instructive.

"When the introduction of Cochituate water into Boston was under discussion, Professor Horsford of Cambridge made a series of experiments with regard to the action of the Cochituate, as well as of other waters, upon lead (see Boston City Documents, 1848, Nos. 18 and 32; also Proc. Amer. Acad., ii., p. 64). He concluded that lead pipes could be used with safety for its transmission, and that the coating formed would be to such an extent insoluble and impenetrable, that after a certain time the action of the water would be practically nothing. These experiments in the laboratory have a certain value, yet too much importance must not be given to them, performed, as they are, with small quantities of water and with a limited amount of metallic surface, and with the relative amounts of the two so different from those that are brought together in actual practice. Indeed, experience has shown that some waters, which in the laboratory seemed to corrode lead but slightly, really act very violently on the pipes through which they are conveyed.

"With regard to the action of the Cochituate water on lead, we should infer from the small quantity of chlorides and nitrates, and from the proportionally large quantity of carbonates, that this action would not be very considerable, and we are now in a position to determine from the actual experience of so many years how much it really amounts to. I have tested many samples taken from the pipes under various conditions, and have never failed to find indications of the presence of lead." . . . .

"In view of the quantitative determinations made, and of a number of qualitative tests, from conversation with men of experience engaged in the plumbing business, and from personal examination of various samples of lead pipes which have been in actual service, I feel justified in asserting:—

"(1.) That Cochituate water which has passed through lead pipes is never absolutely free from lead.

"(2.) That when the water is first introduced into the pipes, there is more action on the pipes, as far as contamination of the water is concerned, than subsequently, but that after a few days' service the quantity of lead in the water is practically very small.

"(3.) That there is always more lead in the water after it has stood for some hours in the pipes than when it is allowed to flow freely.

"(4.) That when the water passes through a lead-lined tank it will be likely to contain in solution or suspension a more considerable quantity of lead salts, from the fact that the lead is corroded more rapidly on the sides of the tank at the surface of the water. Moreover, in such tanks there is generally a considerable extent of surface of contact between solder and the lead.

"(5.) That in the introduction of water into the pipes, the first effect is the tarnishing of the brightness of the lead due to the formation of oxide or suboxide; that there begins to form, almost immediately, a coating consisting on the *outside* of a brown and, at first, rather loose deposit (the colour of which is not due to iron-rust as is ordinarily supposed, but to organic matter), and *underneath* of a white deposit composed mainly of carbonate of lead; that this coating increases with time in firmness and also in thickness, but that the rate of increase is so slow that practically the pipes used for conveying *cold* water do not wear out and become unserviceable except from some accidental circumstance, as the freezing of the water, or, as is often the case where the pipes are laid under ground, from corrosion from the outside, or from a cause immediately to be mentioned. That, however, the pipes even under ordinary conditions would eventually wear out, I have no doubt, as there seems to be no limit to the action. I have indeed a specimen of a pipe which, being in contact with cold water only for a period of fifteen years, was so corroded in the vicinity of a solder-joint as to be eaten through, and along the pipe there is a thick coating consisting almost entirely of carbonate of lead (with organic matter, a little carbonate and sulphate of lime, and a trace of oxide of iron) which has penetrated the pipe in some places to the depth of 1-15th of an inch and more. There is one other circumstance contributing to the wear of cold-water pipes which is not to be overlooked. The water is delivered in many cases under such a pressure that the pipes tend continually to expand. The effect of this is often to strain the pipes so as to form longitudinal seams or grooves of greater or less length, and the corrosion, taking place under such favouring circumstances more rapidly, sometimes extends through the pipe, which is thus rendered unserviceable by a combination of chemical and mechanical action.

"(6.) That pipes used to convey *hot* water are corroded more or less rapidly, a deposit similar to that in the cold-water pipes being formed, and the corrosion manifesting itself most decidedly in the vicinity of the solder-joints, and where the pipe is sharply bent. Whether the iron-rust, coming from the *water-backs* in which the water is heated, contributes to produce this effect, I am not prepared to say. The disarrangement of the particles of the lead and the change in its mechanical structure, brought about by the alternate and unequal contractions and expansions to which it is subjected, must present more favourable opportunity for the corrosive action due simply to the passage of the water through the pipes." . . . .

"From the evidence given, it seems reasonable to believe that the use of lead pipe for the conveyance of drinking-water is always attended with a certain degree of danger, because such water always contains lead; and that this danger varies in degree with the character of the water conveyed, and the susceptibility to lead poison of those who drink it.

"The chemist can say that water containing air (or natural water) always acts upon lead; but he cannot say that a certain kind of water will, under all circumstances, take up and convey in solution only a certain proportion of lead. The physician finds it equally impossible to say that a certain proportion of lead in water will hurt no one.

"From these two shifting elements of difficulty come all the doubt and obscurity which have made the influence of lead-pipe water a disputed question.

"How much lead can we habitually take without injury? No one would voluntarily add it in ever so small amount to the water of the spring, well, or lake which supplies his drink, yet thousands and even hundreds of thousands of people in Massachusetts do constantly receive it in very minute amounts without manifest injury.

"No well-authenticated instance of lead-poisoning from the Boston water has come to our knowledge, although lead pipe is almost universally used for its distribution. The same statement may be made as regards Charlestown and Worcester, and is doubtless true of other large cities and towns supplied by waterworks from lakes of great purity. We may conclude from experience and observation that the character of the water in these cities is such as to dissolve lead in so small amounts as to be generally harmless,—and we use the word 'generally' advisedly, because, although paralysis and wrist-drop, and the most distinctive signs of saturation with lead have not been observed, it does not therefore follow that minor obscure ailments, particularly of the nervous system, have not been aggravated or even caused by this subtle poison. There are a great many cases of neuralgia, of (so-called) rheumatism, and of dyspepsia, whose causes are unknown.

"When we see that Professor Nichols finds one-ninth of a grain of lead to the United States gallon (equal to one-eighth of a grain to the English gallon) in the hot-water pipes of a private house in Boston, and remember the possibility of such water being habitually used for cooking purposes, it is well to be cautious in giving it a good character under all circumstances.[1]

"But if the lake water of the cities mentioned is generally incapable of dissolving a dangerous proportion of lead, it is equally certain that the water of springs and of wells is very often ready to dissolve an amount which will produce dangerous disease.

"The chemical evidence already presented shows that it is so difficult as to be practically impossible to say, even when we know the constituents of the water, whether it will dissolve dangerous amounts of lead until it has been actually tried by domestic use and for considerable periods of time.

"It is well that we should have some idea of what have been found to be dangerous amounts of lead for habitual use.

"Dr Angus Smith says that one-fortieth of a grain per gallon will affect some persons, while one-tenth of a grain may be required for others. Dr Parkes, a high English authority, thinks that any quantity exceeding one-twentieth of a grain per gallon must be regarded as unsafe. These opinions are also held by Professor Graham, Dr Taylor, and other equally known chemists and physicians. Dr Adams, of Waltham, reports a case of poisoning in which only one-hundredth of a grain per gallon was found in the water. In the celebrated case of the poisoning of the family of Louis Philippe by drinking water which had been stored in a lead tank, the amount of lead was seven-tenths of a grain per gallon. This quantity affected 34 per cent. of those who drank it.

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[1] A case of lead-poisoning recently occurred in the city of New York, which was traced to the use of Croton water (whose character has been thought safe), drawn from the hot-water pipes after standing in them all night. In this water "cracked wheat" was soaked every morning, preparatory to boiling.

"The susceptibility of individuals to the action of poisons, whether metallic or non-metallic, is known to differ exceedingly. Many persons pass half their lives in ignorance of their own peculiarity in this respect, and then have revealed to them by some lucky accident that what to their neighbours has been harmless, has been for a long term of years the source of great discomfort or illness."

The conclusion arrived at from a consideration of the important facts just noted being the very proper one, that "The only safe practice with water which has not been tested with lead pipe by long experience is, to use some other material than lead for its conveyance," and, we may add, storage and distribution.

Again, the profession are well aware how much importance has been attached, especially by English writers, to the production and propagation of typhoid fever and other zymotics by drinking water contaminated by decomposing organic matter, especially when of excrementitious origin, and that the cure proposed for this is the providing from a pure source of a supply of water, sufficient not only to supply the wants of the inhabitants, but also to efficiently flush the sewers. The experience of Boston in this respect has been somewhat remarkable. Previous to 1848 it "was riddled with wells and privies, side by side, all over its limited and very crowded territory. Sewage contamination of drinking-water was inevitable. The water must have been continually charged with the products of decomposition, and even direct mixture of decomposing animal matter of the most repulsive kind must have been frequent.

"Since 1848, the Boston water from Lake Cochituate has been almost as free and abundant as air, and (except, perhaps, from the influence of lead pipe) is of the purest possible quality. Very few wells are now in use, or have been for many years. We do not know of the use of a single one. Here are conditions to test the influence of drinking-water as a means of propagating typhoid, on a grand scale, and, for aught we see, complete. The result seems to be a diminution of typhoid, but in no very striking degree; only such a diminution as might be looked for if the purification of air rather than of water were in question. The sewers are now at all times discharging very large amounts of water, and carrying away from among us impurities which otherwise would linger in the drains. The sewers are more thoroughly washed,—and the people too."

Nevertheless, it is not denied that the typhoid poison occasionally enters the system through the stomach; indeed, satisfactory proof has been obtained from other parts of the state of Massachusetts, of so definite a character as to leave no doubt that the fever poison was received through drinking-water. The "typhoid poison seems capable at times of resisting the power of rejection or of change which the stomach so often exhibits when noxious things have succeeded in passing the sentinels of sight and taste. Cases are reported in which it is impossible to doubt that the disease was received by absorption through the alimentary canal, but in the great majority of cases occurring in Massachusetts in which causes can be traced, *air* (and not water) must be regarded as the vehicle.

"The evidence is here still more direct. Among the most striking experiences are those given in the letters from Swampscott, Hadley, Watertown, Lexington, and Marshfield. The Kearsage Avenue cases in Boston seem very conclusive on this point. Running through the whole correspondence is a recognition, more or less complete, of the agency of putrid air in causing typhoid fever. This faith is not universal, yet it seems quite general in the medical profession. There are those who see it plainly and express it clearly, as in the words of our venerable correspondent at Oxford:—'So firm is my belief of this (referring to exhalations from foul drains, cellars, privies, and pigsties), that when I meet with a case of typhoid fever not readily traceable to some of these causes, I infer that *the truth has not been told me, or that my perceptive faculties have been at fault.*'

"And this leads us to refer to the difficulty which is often encountered in tracing to its hiding-place the real or probable cause of the mischief. A man almost instinctively resents the supposition that his premises may be foul. It is a kind of personal affront which a physician may well doubt the propriety of giving on mere suspicion, and without proof. A sensible man should, of course, receive such suggestions in the spirit in which they are offered, but, unhappily, all people are not sensible. But suppose suspicion to be excited concerning the state of a cesspool or a drain, or any other concealed structure, or even one only half concealed, like a privy vault. It is by no means an easy thing to learn their exact condition. The bad smell which they may emit is no certain indication (or, perhaps we should say, no certain measure) of their danger to health. There is reason to suspect that the fever-producing poison is odourless, and that, under certain circumstances, it may be set free from decomposing substances before the foul-smelling compounds of hydrogen come to give us warning.

"The danger may be greatest when decomposition is (so to speak) going on under difficulties—when it is impeded, suppressed, or imperfect.

"A physician may suspect a connexion between a sink-spout or a drain and the family well, but unless the water is offensive to the taste he finds it very hard to prove it without breaking up the ground with much cost and labour. He may suspect similar connexions of conduits for air or water, or both combined, which would poison a family, but the work of tracing them is expensive and troublesome, and requires time and special skill which may not be at his command. It needs perseverance, and a kind of training to be got only by experience to unearth these half-hidden nuisances. Look at the history of the typhoid poisoning of a family in Watertown in 1868 in the preceding correspondence. The first examination of the drain proved nothing; the second was only partially successful; the third made evident the cause of the disease. If the proprietor of this house or his physician had been content with the first search the record of these cases would have come down to us, like that of so many others, as from 'causes unknown and perfectly mysterious.' "

The Report then refers to the accumulation of decaying vegetable matter in cellars as a source of typhoid fever, and enters into an elaborate and important investigation into the influence of putrefactive emanations from the soil in the production of this disease. Innumerable difficulties beset these inquiries, owing, in a great measure, to the fact that this poison, though possibly always present, is not always equally active; this being in all probability due to its being generally destroyed or neutralized by Nature's great disinfectant, ozone, only becoming effective when that is deficient from unknown atmospheric causes, when it is from equally unknown terrestrial causes in excess of its neutralizer, or when from bodily constitution those exposed to its action are temporarily more sensitive. In this way destitution plays no unimportant part in the spread even of fevers which in no way arise out of it, and temporary febrile conditions of purely climatic origin pave the way for the reception of specific fever poisons, even in those who have seemed to be thoroughly acclimatized, so to speak, to their action. We must also remember, in regard to typhoid or enteric fever, that not only are we capable of becoming acclimatized to its poison, but that it is a very common disease of childhood, little fatal in such circumstances, and not unfrequently unrecognised, while one attack, as a rule, confers immunity for the rest of life. All these various causes are capable of fully accounting for the many exceptional cases of escape from such diseases in circumstances where escape seemed hardly possible, such as those related by Parent-Duchatelet and others, and we fully endorse the sentiments with which this Report concludes, which are thus expressed:—

"We cannot more fitly conclude these remarks on the probable causes of the typhoid fever of Massachusetts than by again quoting one of the most original and far-seeing men of the last century, Dr Benjamin Rush, who says:—'To every evil the Author of Nature has kindly prepared an antidote. Pestilential fevers furnish no exception to this remark. The means of preventing them are as much under the power of human reason and industry as the means of preventing the evils of lightning or common fire. I am so satisfied of the truth of this opinion, that I look for the time when our courts of law shall punish cities and villages for permitting any of the sources of bilious and malignant fevers to exist within their jurisdiction.' "

Dr Bowditch, the chairman of the State Board of Health, contributes a long report on houses for the people, on convalescent houses, and on the sewage question, based on investigations made in England, all of it worthy of careful reading. The following remarks on the sewage question are at once interesting and amusing:—

"There is no single subject that is attracting more attention in England, and which excites (strange as the remark may seem to some people in Massachusetts) more heated partisanship than the vast questions looming up under the various names of 'earth-closet,' 'water-closet,' 'sewage,' 'its danger to health,' 'its widespread and fatal waste,' 'its utilization as a manure,' etc. In other words, the great sanitary question of to-day throughout Great Britain is the economic removal from houses of what is deleterious to man, and the proper use, as a source of income, of what has been heretofore wholly wasted. Thousands of pounds sterling are annually sent from England to Egypt to gather up the old mummied remains of past centuries of men, or merchant vessels sail round the world in order to gather the fæces of birds, that perhaps for equally long cycles of time have brooded over some one or more of the beautiful islands of the Pacific Ocean. And all this expense is incurred, while actually throwing away immense quantities of a material having the highest fertilizing qualities.

"These vexed questions cropped out and were bandied about from section to section of the meeting of the British Association for the Advancement of Science, recently held at Liverpool, and presided over by the celebrated Huxley. . . . .

"The subject was every day brought up in some way or another in the Health section, and I soon found that partisan violence was not confined to republics alone, nor to political parties, nor could theology ever produce more bitter denunciations than were poured out by one party upon the other upon this subject. If I had not been amused I should have been indignant at hearing men whose works I have read for a quarter of a century, and thought were men of consummate wisdom, sagacity, and coolness, use language worthy of Billingsgate toward an unlucky and persistent supporter of the 'earth-closet' idea. This poor abused article, which many have found so serviceable to their houses and private rooms, would have been utterly annihilated if the venerable statistician and writer on health could by any word of his have gained that end. One opponent of this unhappy article declared, for his part, that he was unwilling to 'take counsel' from so foolish a creature as the cat, who, from the time of Noah, has quietly been teaching what Rev.

Mr Moule proclaimed, *ex cathedra*, only a few years ago. Dr Farr at length came to the mediation of both parties by suggesting that, after all, both had the same object at heart, viz., the disinfection and removal of unwholesome articles from our homesteads, and the only diversity of opinion was on a minor point, viz., the method to be pursued for that disinfection and removal."

The effects of the use of alcoholic drinks on the public health are also ably considered; and the Report is concluded by an inquiry into the influence on health of the use of milk from cows affected with aphtha epizootica, in which large use has been made of a paper which appeared in our number for February 1863, p. 704, but which the author has surely not fully read, as he advises boiling the milk as a means of destroying the contagion, while there it is shown that a temperature much lower than that of boiling renders the milk unsightly, to say the least of it, by coagulating the albumen with which it is contaminated.

Neuralgia and the Diseases that resemble it. By FRANCIS E. ANSTIE, M.D. Lond., etc. London and New York: Macmillan and Co.: 1871. Pp. 296.

THE views developed in this work were briefly sketched by the author in his article on Neuralgia, in Reynolds's "System of Medicine," some three years ago. They are now given to the world in a more complete form. He endeavours to vindicate for neuralgia a distinct and independent position, and to show that it is not merely an offshoot from gout or rheumatism, and still less a mere symptom of a score of different and incongruous diseases. In order to do this fully it has been necessary to give a separate account of all such spurious neuralgias as are of sufficient importance to demand it, especially of such as are most likely to lead medical men astray in their diagnosis.

The idea of neuralgia developed in this work is, that it is essentially an atrophy of the posterior root of the spinal nerve in which the pain is felt, and that this atrophy is produced in some cases by a centripetal neuritis migrans causing a limited myelitis, which issues in atrophy, the subjective expression of which is neuralgic pain, while in others he believes that the peripheral irritation stops short of the production of an actual myelitis, though the result is similar, viz., the production of a non-inflammatory atrophy in cells of posterior nerve-roots which are congenitally of weak organization. We have read Dr Anstie's work with the greatest pleasure, and we hope with profit, and we can conscientiously recommend it to our readers as a fair attempt at the enunciation of a reasonable pathology of a disease which is sufficiently common, and more than sufficiently important, from the suffering it occasions, and its frequent rebelliousness to treatment, to constitute it one of the gravest sources of anxiety to the practitioner. Dr Anstie's views require to be maturely considered before we can accept them in their entirety; meanwhile, they provide us with a clue which may ultimately guide us to a more successful treatment of this obstinate disorder. Some of his statements we are able to confirm, especially as to the remarkable connexion he has pointed out between the migraine of adolescence and the ophthalmic neuralgias of later years, as to the advantages of cod-liver oil in the very young and in the aged, the utility of quinine in non-malarial ophthalmic neuralgias, and its non-utility in other neuralgias of non-malarial origin, and particularly as to the remarkable effect of arsenic even in a form of neuralgia so alarming and usually so obstinate as angina pectoris. The whole chapter on the treatment of neuralgia is, however, of extreme interest, and exhibits in every page that innate capacity for duly appreciating the therapeutic influences of drugs, without which no one can be a great practitioner, just as the previous part of his work reveals that power of analyzing symptoms and referring them to their proper source which constitutes a good pathologist, both faculties being necessary to any one who aspires to the character of a sound physician.

Notes on the Treatment of Skin Diseases. By ROBERT LIVEING, A.M., M.D. Cantab. Second Edition, with Additions. London: Longmans, Green, and Co.: 1871. Pp. 104.

WE have already spoken favourably of the first edition of this little work, and we congratulate the author on its so speedily attaining a second edition. It is a useful and handy note-book of cutaneous medicine, suitable for the pocket, and containing a concise glossary of the terms employed, and a useful formulary.

Part Third.

MEETINGS OF SOCIETIES.

OBSTETRICAL SOCIETY OF EDINBURGH.

SESSION XXXI.—MEETING III.

Wednesday, 13th December 1871.—Dr THOMSON, *President*, in the Chair.

WALTER FORBES, M.D., 4 West Newington Terrace, was admitted as an ordinary Fellow of the Society.

I. *Dr D. Gordon* read a paper on a new kind of MIDWIFERY

FORCEPS. The separation of the blades from the handles of the obstetric forceps greatly facilitated their use; but the principal difficulty, that of locking them, remained, and is now, for the first time, entirely removed by the improvement which I have now to mention. It is simply this :—The handles, hitherto separate, are *united* by a common circular or scissor joint. This is a feature in the instrument which, with the separate blades, is entirely new, and renders its use more easy and accurate. Their proximate ends are so made as to slip easily into sockets suited to them in the stems of the blades, to which they become securely fixed by catch-springs. When the blades are introduced and properly adjusted on the head, the handles, *united*, are readily applied to them, and immediately, the operator finds he has the head already firmly fixed in the grasp of the instrument, and that all the difficulty of locking has been avoided. Another important improvement is that the blades are so much more curved, and fit the head so closely, that no space is left between them and the presenting part of the head. By this, the difficulty of extraction, especially when the outlet is narrow, and the danger of injury to the soft parts, are much lessened. The handles are of steel, small and short, but well curved, so as to give a secure hold.

Dr Thomson thought that the blades were not long enough; they would be very apt to slip; and, moreover, the lever power was not sufficiently great for long-forceps cases.

Dr Craig said the handle was faulty, as there was no catch for the hand, which would be liable to slip when the instrument got covered with the discharges.

Dr Ritchie thought that the catch-spring was too weak, and the scissor-joint gave very little compressing power.

Dr Keiller did not think that the blades were large enough to encircle the head and afford space for its proper moulding. In long-forceps cases, all knew the difficulty of getting the blades quite opposite each other, and the necessity, therefore, of having as loose a joint as possible. With Dr Gordon's joint it would be almost impossible to get the blades fixed on the handle in such cases; the greasy state of the blades, too, would add to the difficulty in managing them. In simple cases, where the head was down on the perineum, he granted that the instrument might be useful. However, he promised to give the forceps a fair trial.

Dr Sidey said the handle was the chief point, as you might get blades of any size or shape to fit it.

Dr Young mentioned a case recently under his care—a lady æt. 44, first pregnancy. She had been in labour a day and a half; the soft parts were very rigid, and the head large. He applied Simpson's forceps, and although he exerted all his strength, it was thirty-five minutes before he succeeded in delivering her. He did not think that he could have managed it with the instrument before him.

Dr Bell was so satisfied with the instruments at present in use, that he saw no reason for having new ones. He never had any difficulty in applying Simpson's forceps, nor had he ever seen any serious consequences follow their use. With regard to Dr Gordon's remark, that his new instrument might be employed without either the patient or her attendants being aware of it, he was of opinion that no operation should ever be performed without the full consent of the patient or some near relation.

Dr Gordon said the joint might be made looser. The blades, he maintained, were sufficiently long. If longer, they would prove injurious to the soft parts of the mother, by projecting beyond the head. He had no doubt but that in a short time his new instrument would be the forceps in general use.

Part Fourth.

PERISCOPE.

ON THE THERAPEUTICAL VALUE OF THE HYPODERMIC INJECTION OF ERGOTINE IN HÆMOPTYSIS.—Dr Currie Ritchie of Manchester has recently employed this treatment in nine cases of hæmoptysis. CASE 1.—A. B., aged 22, spat florid blood in June last, after a long walk, in considerable quantity. From that time till September had more or less cough, with occasional streaks of blood in sputa, menstruation regular, was then seized, after dancing, with severe hæmoptysis, lasting from 2 A.M. till 11 A.M., when Dr Ritchie found her anæmic, with a troublesome cough, and expectorating mouthfuls of blood. Five grains of ergotine dissolved in water were injected into the left arm, and perfect rest in bed enjoined. No expectoration of blood took place after the injection, and two months afterwards she was apparently in perfect health. CASE 2.—W. S., aged 30, had mitral regurgitation, with consolidation of apex of left lung. Dr Ritchie found him, at 2 A.M. of 20th September, labouring under profuse pulmonary hæmorrhage, which had already lasted one hour. In Dr Ritchie's presence he expectorated two ounces of florid blood. Five grains of ergotine dissolved in water were injected subcutaneously, the hæmorrhage was at once arrested, and did not return. CASE 3.—A man, aged 26, had purulent expectoration for more than two years, with occasional streaks of blood. On 26th September came to Dr R. labouring under severe hæmoptysis, which had lasted for two days continuously, in spite of medical treatment; according to his own account, he had spat up several pints of blood. His face was blanched, and the mucous lining of his lips and cheeks very pale. Five grains of ergotine dissolved in water were injected subcutaneously; not a single bloody sputum followed the injection till the 28th, when a repetition of the injection was followed by a similar abrupt cessation of the hæmoptysis, which, however, recurred on the night of the 29th, probably owing to domestic inquietude from his wife insisting on carrying him off to Ireland. CASE 4.—F. B., aged 62, had suffered from slight hæmoptysis for several days. Five grains of ergotine in watery solution were injected. At the end of two days the hæmorrhage continued as before; a repetition of the injection was followed by complete cessation of the hæmoptysis, only one or two small dark-brown coagula following the second injection. CASE 5.—A. N., aged 17, had a cavity the size of an orange in the apex of her left lung when first seen, and shortly afterwards was attacked by severe hæmoptysis. Five grains of ergotine in watery solution were injected, and only one single bloody sputum followed the injection. No return of the hæmorrhage had taken place a month after when last seen. CASE 6.—J. C., aged 22, spat blood in May last for two or three days, and again a fortnight later. She remained in fair health till 11th October, when hæmoptysis again recurred to the extent of "nearly a quart of bright red blood" before Dr R. saw her. Five grains of ergotine in watery solution were injected, and no more blood was expectorated till the 15th, when, after a severe fit of coughing, a streak of blood was detected on three several occasions in the sputum. In this case the injection produced a good deal of pain and induration round the seat of puncture, lasting till the 19th of October. CASE 7.—K. M., aged 19, had slight hæmoptysis for several days; a few hours before being seen had spat up several mouthfuls of pure blood. Five grains of ergotine in watery solution were injected subcutaneously, only one bloody sputum followed, and a fortnight later there had been no return of the bleeding. CASE 8.—J. W., aged 28, caught cold in March last, and continued to expectorate phlegm for two or three months; he then caught a fresh cold, and ever since his sputa have been streaked with blood. The sputa are tenacious, not frothy; expectorates most blood when at work, but feels easier there. Five grains of ergotine in watery solution injected on 1st November. Expectoration of blood took place once on 1st November, and once on the morning of the 2d; but, in the afternoon of the 2d, it became considerably increased, and continued till the 6th. So much irritation had been produced by the injection, that Dr R. did not repeat it till the morning of the 7th, when three grains of ergotine were injected, dissolved in equal parts of glycerine and spirits of wine. There had been no return of the hæmoptysis on the 14th when last seen, and no trace of irritation from the second injection. CASE 9.—Mrs D., aged 60, under Dr Bowman's care. On the 19th October had been spitting blood continuously for two days, except for about six hours, when there was almost complete cessation. At 3 P.M. on the 19th hæmoptysis recommenced, and she was ordered ten-minim doses of the liquor ergotæ every two hours, without effect. At 9 P.M. she was expectorating blood profusely, an incessant hacking cough compelling her to do so every few seconds. At Dr R.'s suggestion, Dr Bowman injected five grains of ergotine dissolved in water, after which there was absolutely no hæmoptysis, and when last seen, on 26th October, she was apparently quite well.—*Practitioner*, Dec. 1871.

[These cases are very instructive, and worthy of consideration. We have not found the solution in glycerine and spirit less irritating than that in pure water, usually the reverse. Injection over the sternum, where there is little cellular tissue, is always, however, productive of more irritation than in the arm, where the cellular tissue is more lax; irritation in the latter position we have been more inclined to attribute to a dirty needle (introduction of germs ?) than to the nature of the fluid introduced. Dr R. very correctly remarks, that ergot introduced by the stomach is not nearly so efficacious as when injected subcutaneously in all those cases where the immediate development of its physiological action is required; and we may make the same remark in regard to other drugs, for a similar requirement necessitates a similar employment of many other remedies besides ergotine and narcotics.—ED. *E. M. J.*]

ON EARACHE.—In the October number of *The Practitioner*, Dr Anstie related his personal experience of an attack of auricular herpes zoster in a most instructive and interesting manner, and he then pointed out that many of the cases of earache in children were due to a similar cause. He stated that earache is very common in children, that in a large proportion of them there is no gradual increase of pain and swelling of the meatus auditorius till relieved by discharge of pus, but that the pain, in a large proportion of cases, sets in with great severity at once, is unattended by any but the most moderate tumefaction within the meatus, rarely followed by any discharge of pus, but mostly by the shedding of small scales, like the dead epidermis of faded vesicles, accompanied by a very little bloody serum—precisely what occurred in his own case. He then pointed out that, though children are as liable as adults to herpes zoster, it is in them rarely accompanied by neuralgic pain; and he inquired why auricular shingles alone should in them be accompanied by a true neuralgia. And though he could give no proper answer to this query, he pointed out a valuable suggestion that may hereafter lead to a solution of this question, viz., that from the exhausting influence of the growth of the teeth upon the superior and inferior maxillary nerves, they are, in children of a nervous temperament, extremely liable to severe paroxysms of true neuralgic pain darting into the ear, throat, and cervical nerves, arising from a very slight amount of dental caries; that they were the first of all the sensory nerves to exhibit any tendency to neuralgic pain; and that the peculiar physiological life of individual portions of the nervous system was doubtless connected with peculiar pathological tendencies to pain, convulsions, etc., a subject which has as yet been too little attended to. He also pointed out the practical conclusion to be drawn from this view of infantile earache, viz., that to leech is injurious, and that the best treatment for it would be to inject morphia subcutaneously, sedulously to exclude the air from the whole nerve territory affected, and to apply mustard or cantharides over the "occipital triangle" of anatomists, taking care that the irritation should not be too severe, for fear of setting up erysipelatous inflammation over the neck, face, and scalp.

In the December number of the same journal, Dr Dalby points out as the means of making a differential diagnosis of the various causes of earache, that, when it depends on inflammation of the meatus, tenderness of that part is revealed by the introduction of the ear speculum even before there is any tumefaction or redness of the part—the marked difference of the sensations elicited in examining the affected and the unaffected ears revealing the true nature of the case. In the earache of auricular shingles there is entire absence of this tenderness. But he adds, that earache depending on catarrh of the middle ear is more likely to be confounded with the pain arising from auricular herpes, because in it we have no tenderness of the meatus, and because the pain in it is not continuous, as in inflammation of the meatus, but remittent; and he points out that, in the early stages, this affection is to be recognised by impaired hearing, and by the presence of increased secretion within the middle ear lobe, recognised by auscultation—a piece of light india-rubber tubing being made to connect the ears of patient and surgeon, while the former inflates the tympanic cavity with his mouth and nose closed. In children, the tympana must be artificially inflated by blowing into the nose while they swallow; in very young children swallowing is unnecessary, because in them the faucial orifice of the Eustachian tube is extremely patent.

On the Use of Bromide of Pottassium in Epilepsy. By M. Jules Falret.—He gives the results of his treatment at Bicêtre during the years 1867–70, where he treated, almost invariably, confirmed cases where the disease was of long standing. He begins by giving 15 grains a day, very gradually increased until the dose of one drachm is reached. This usually diminishes the number of attacks, and is then persisted with; if not, the quantity is again increased, every week or fortnight, until eight scruples, or two drachms, are taken daily. If considerable improvement results, and if no bad consequences are observed, this dose is continued for one or two years, and then gradually brought down to the original dose of 15 grains. He attaches great importance to the slowness with which the dose is increased and diminished; and ascribes most failures to suddenly leaving off the medicine. By this treatmeant he states that he has cured one-seventh of his cases, greatly improved three-sevenths, and failed with the remainder. Attacks of maniacal violence proved most amenable to treatment; next in order came nocturnal fits, then diurnal; vertigo and the "petit mal" being most difficult of cure, these last sometimes taking the place of ordinary fits under treatment. An acneiform eruption on the face, shoulders, and back is generally observed as soon as the daily dose of one drachm is reached; when it is not produced, M. Falret usually finds that the bromide does no good—it sometimes becomes so annoying as to prevent treatment being continued. Considerable loss of mental power and other cerebral symptoms, of course, indicate an immediate suspension of the remedy; they seem to M. Falret more frequent in private practice than at Bicêtre. One patient died very suddenly, while taking only moderate doses of the bromide; the author analyzed the viscera, and found considerable accumulation of the salt in the brain and liver.

This paper was read before the Société Médico-Psychologique, and gave rise to two very interesting discussions, of which only the most salient points can be given here.

M. Morel looked upon the doses given as "fearful;" he has himself rarely given more than two scruples or one drachm daily.

M. Legrand du Saulle, on the contrary, stated that he saw no danger in such large doses, provided they were only arrived at very slowly: his full dose is two drachms and a half daily, which he only attains after several months' treatment. With this precaution, he has never seen any evil results, not even emaciation. He believes, however, that such large doses are only needed for men, and that women are sufficiently acted upon by half a drachm to one drachm daily. He has treated 138 cases in all, cured 10 of these, greatly improved 19, improved 45, and failed in 64. He prefers the bromide of sodium for chorea, hysteria, hemicrania, and the early stages of melancholia; and the bromide of ammonium in all forms of cerebral congestion; he has seen it relieve symptoms of this kind in general paralysis with great rapidity.

M. Voison, who was the originator of this graduated method of administering the bromide, read a long critique upon M. J. Falret's paper. Besides acne simplex and indurata, he has observed another eruption of specific character in persons taking the salt. This consists of patches of confluent acne pustules, generally on the calves of the legs, which end by producing adherent scabs, and sometimes ulcers difficult to heal. He shows, by figures, that the occurrence of skin eruptions is no evidence of a favourable action of the remedy, which he looks for in some sign that it is acting on the medulla oblongata. This he finds by titillating the pharynx, nares, and epiglottis, and observing whether the reflex acts of nausea, sneezing, and coughing are produced. As soon as they cease, he considers the medicine to be producing its physiological action, and, therefore, to be acting beneficially upon the disease. He dwelt at some length on the various phenomena of bromism (among which he has once seen acute mania), and urged that no patient should be allowed to take more than one drachm of the bromide daily, without being frequently examined by his physician. Of 41 cases (generally of confirmed epilepsy) treated by M. Voison, 17 have had no attack for five years, 20 are improved, and 4 remain in the same state. No one seems to have questioned the efficacy of the bromide during these two meetings, but, since then, M. Delasiauve and a few men of less note have expressed doubts as to its curative action in confirmed epilepsy, and have seen increased violence of attacks follow its suspension. What would they have said, had they known that Binz and other Germans totally deny that the bromides have any different action from the chlorides of the same bases?—*Journal of Mental Science*, January.

ARTIFICIAL PRODUCTION OF EPILEPSY IN GUINEAPIGS.—M. Brown-Séquard has published some interesting experiments on the artificial production of epilepsy in guineapigs. These are in continuation of the experiments which he performed by mutilating the spinal cord; and he now finds that division of the sciatic nerve or of its principal branch, the internal popliteal, produces the same results. In a few days after the operation it is found that irritation of a certain portion of the skin brings on various clonic and tonic spasms, and finally an attack of true epilepsy. The skin thus affected is an oval space on the same side of the body as the mutilation, and is bounded by a line connecting the following points: the anterior palpebral angle, the projection of the upper jaw-bone, the centre of the inferior maxilla, the scapulo-humeral articulation, the middle of the anterior edge of the scapula, the lobe of the ear, and so back to the starting-point. At the same time this "zone épileptogène" loses its power of sensation, lice accumulate in it, etc.—*Journal of Mental Scicnce*, January.

REPORT ON TOXICOLOGY, FORENSIC MEDICINE, AND HYGIENE. By BENJAMIN W. RICHARDSON, M.D., F.R.S.—*Toxical Studies on Chloral Hydrate.*—The most important subject, in a toxicological point of view, that has been under discussion since our last report, has relation to chloral hydrate. The increasing employment of this narcotic by the members of the general public, without the advice of the professors of medical science, has been attended by several fatal occurrences; while in instances where fatal results have not taken place, peculiar symptoms have followed the frequent self-administration of the narcotic—symptoms of serious import, and demanding ready recognition. We have, consequently, devoted some labour to the investigation of certain facts bearing on the toxicological history of chloral hydrate, to which, and the results of our inquiries, we would now direct attention.

1. We have endeavoured to ascertain what is a dangerous and what a fatal dose of chloral hydrate. The conclusion at which we have been able first to arrive on this point is, that the maximum

quantity of the hydrate that can be borne, at one dose, bears some proportion to the weight of the animal subjected to its influence. The rule, however, does not extend equally to animals of any and every class. The proportion is practically the same in the same classes, but there is no actual universality of rule. A mouse weighing from three-quarters of an ounce to an ounce will be put to sleep by one quarter of a grain of the hydrate, and will be killed by a grain. A pigeon weighing twelve ounces will be put to sleep by two grains of the hydrate, and will be killed by five grains. A guineapig weighing sixteen ounces will be put by two grains into deep sleep, and by five grains into fatal sleep. A rabbit weighing eighty-eight ounces will be thrown by thirty grains into deep sleep, and by sixty grains into fatal sleep.

The human subject, weighing from one hundred and twenty to one hundred and forty pounds, will be made by ninety grains to pass into deep sleep, and by one hundred and forty grains into a sleep that will be dangerous.

From the effects produced on a man who had of his own accord taken a hundred and twenty grains of the hydrate, and who seemed at one period to be passing into death, we were led to infer that in the human subject one hundred and forty grains should be accepted as dangerous, and one hundred and eighty as a fatal dose. Evidence has, however, recently been brought before us which leads us to think that, although one hundred and eighty grains would in most instances prove fatal, it could, under very favourable circumstances, be recovered from.

Dr Hills, of the Thorpe Asylum, Norwich, has, for example, favoured us with the facts of an instance in which a suicidal woman took no less than *four hundred and seventy-two grains* of the hydrate dissolved in sixteen ounces of water, and actually did not die for thirty-three hours. Such a fact, ably observed as it was, is startling; but it does not, we think, militate against the rule that one hundred and forty grains is the maximum quantity that should, under any circumstances, be administered to the human subject.

2. A second point to which our attention has been directed is, what quantity of hydrate of chloral can be taken with safety at given intervals for a given period of time, say of twenty-four hours. To arrive at some fair conclusion on this subject, we calculated from a series of experiments the time required for the development of symptoms from different doses of the hydrate, the full period of the symptoms, and the time when they had entirely passed away. Great difficulties attend this line of investigation; but we may state, as a near approximation to the truth, that an adult person who has taken chloral hydrate in sufficient quantity to be influenced by it, disposes of it at the rate of about seven grains per hour. In repeated doses, the hydrate of chloral might therefore be given at the rate of twelve grains every two hours for twenty-four

hours, with less danger than would occur from giving twelve times twelve (144) grains at once; but we do not think that amount ought, except in the extremest emergencies, to be exceeded, in divided quantities.

3. A third point to which we have paid attention is, the means to be adopted in any case when, from accident or other cause, a large and fatal dose of chloral hydrate has been administered. We can speak here with precision. It should be remembered that this hydrate, from its great solubility, is rapidly diffused through all the organism. It is in vain, consequently, to attempt its removal by any extreme measures after it has fairly taken effect. In other words, the animal or person under chloral, like an animal or person in a fever, must go through a distinct series of stages on the way to recovery or death; and these stages will be long or short, slightly dangerous or intensely dangerous, all but fatal or actually fatal, according to the conditions by which the animal is surrounded. One of the first and marked effects of the chloral is reduction of the animal temperature; and when an animal is deeply under the influence of the agent, in the fourth degree of narcotism of Dr Snow, the temperature of its body, unless the external warmth be carefully sustained, will quickly descend seven and even eight degrees below the natural standard. Such reduction of temperature is itself a source of danger; it allows condensation of fluid on the bronchial pulmonary surface, and so induces apnœa, and it indicates a period when the convulsion of cold (a convulsion which sharply precedes death) is at hand.

We offer these explanations in order to indicate the first favourable condition for the recovery of an animal or man from the effects of an extreme dose of chloral hydrate. It is essential that the body of the animal be kept warm, and not merely so, but that the air inspired by the animal be of high temperature. The first effort to recovery, in short, should consist in placing the animal in a warm air. This fact is perfectly illustrated by experiment on the inferior animals. In the pigeon an air of 95° Fahr. is most favourable, in the rabbit an air at 105° to 110°, in the dog the same. In man the air to be breathed should be raised to and sustained at 90° Fahr. at least.[1]

The next thing to be remembered in the recovery of persons under the fatal influence of chloral hydrate is to sustain the body by food. I find that even under deep sleep from the narcotic, although the process of waste is less than is common under natural conditions of rest, there is still a very considerable waste in progress, which, if not made up, is against recovery. I find also that the digestive and assimilating powers, though impaired during sleep from chloral, are not arrested, but may be called into fair action with so much advantage, that if two animals be cast into deep sleep by an excessive quantity of the narcotic, and one be left without food and the other be artificially fed on warm food, one-fourth of the chance of recovery is given to the animal that is supplied with food. In the human subject warm milk, to which a little lime-water has been added, is the best food. Milk is very easily administered mechanically, and it should be administered in the proportion of half a pint every two hours.

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[1] We have no doubt it will be found, as the chronicle of death from chloral hydrate increases, that the mortality from the agent will be the greatest when the thermometrical readings are the lowest, and *vice versâ*.

4. The fourth point to remember is to sustain the breathing; in the inferior animals the question of life or death can be made to turn on this pivot. But the artificial respiration must be carried out with great gentleness; it must not be done by vehement movements of the body or compressions of the chest, but by the simple process of inflating the lungs by means of small bellows, through the nostrils. We have devised in the course of our researches various instruments for artificial respiration—viz., a small double-acting bellows, a small syringe, and a double-acting india-rubber pocket-bellows; and we have lately made an instrument which acts by a simpler method still, *i.e.*, we merely attach to a single hand-bellows a nostril-tube, and gently inflate the lungs, letting the elasticity of the chest-wall do the work of expiration. A little valve near to the nostril-tube effectually stops all back currents from the lungs into the bellows. For the human subject, five charges of air from the bellows should be given at intervals of five seconds apart.

The symptoms of acute poisoning by chloral hyrate are, briefly, profound coma, great muscular relaxation, apoplectic breathing, and flushing of the face and neck, with intermissions of pallor. The eyes are usually rolled upwards as under chloroform, and at times, as impressions of motion are made on the surface of the body, there is muscular tremor, which may pass into convulsion. In time the extremities become cold, and the bronchial surfaces become charged with frothy mucus, which greatly impedes the breathing and hastens the final result.

The chronic symptoms of chloral-poisoning are—sleeplessness, unless the narcotic be taken in very large doses; great mental irritability and muscular prostration; uncertainty of movement, with tendency to fall forward; caprice of appetite and frequent nausea. In some cases there is injection of the conjunctivæ, and in other cases yellowness. The urine, in extreme cases, contains albumen, and the bowels are commonly constipated, the evacuations being white and hard. Chloral hydrate does not produce the ecstatic dream or delirium caused by opium or haschish; on the contrary, it causes, through all the stages of its action, a sense rather of depression than of elevation of mental faculty.—*British and Foreign Medico-Chirurgical Review.*

NOTES ON CHLORAL.—Mr Fairthorne says, in the last number of the *American Journal of Pharmacy*:—Pure hydrate of chloral, according to Dr Rieckher, does not take fire when heated in a spoon over a spirit lamp, but evaporates without residue [the alcoholate when similarly treated inflames]. Nitric acid, sp. gr. 1·20, either cold or hot, should not produce any reaction with it. I find that its aqueous solution produces a dense precipitate when mixed with solution of subacetate of lead. The hydrate is readily dissolved by alcohol, ether, oil of turpentine, benzole, bisulphide of carbon, and the fixed oils. The solution in the last-named article might prove of value to the physician as a topical application, perhaps available in neuralgic or gouty affections. When equal parts of camphor (in small pieces) and hydrate of chloral in crystals are shaken together in a vial and allowed to stand, they become fluid, forming a clear solution. This might also be of use as an external remedy. When hydrate of chloral and sulphuric acid are mixed, a great reduction of temperature takes place. Both pure chloral and its aqueous solution dissolve morphia freely. Quinia is soluble, to a considerable extent, in a strong solution of hydrate—six grains readily dissolving in one and a half fluid drachms. Cinchonia, strychnia, veratria, aconitia, atropia, are also soluble in the same menstruum. From this it appears to be a general solvent for the alkaloids, and perhaps their solutions might be used with advantage for making ointments, or for mixing with oils for liniments, etc. The solution of quinine just mentioned is somewhat fluorescent, but not quite as much so as that of the sulphate. When chloral and glycerine are mixed, a crystalline substance is formed in a few hours. Chloral is a good solvent for camphor or for crystallized carbolic acid, which it deprives of odour to a great extent and renders quite soluble in water. When the latter solution is added to sulphuric acid a pink-coloured solid is produced, which is probably a compound of sulpho-carbolic acid and chloral. When benzoic acid is added to chloral and slightly heated it dissolves, and when cold the mixture solidifies into beautiful radiating crystals.—*Philadelphia Medical and Surgical Reporter.*

Part Fifth.

MEDICAL NEWS.

CORRESPONDENCE.

(To the Editor of the Edinburgh Medical Journal.)

SIR,—In a former communication under the above heading, I directed the attention of my fellow-practitioners to the hygienic and hydrotherapeutic treatment adopted at Ben Rhydding, and the advantages to be derived from a sojourn in that institution. I now wish to show that this peculiar form of treatment is of great antiquity, and entitled to the confidence of the profession.—I am, Sir, yours etc., MEDICUS.

BEN RHYDDING AS A HYGIENIC AND HYDROTHERAPEUTIC ESTABLISHMENT.

There are few things absolutely new, and hydropathy, which has been regarded by many as a modern invention, is in reality only a revival of a very old form of treatment. It is an error to suppose that Priessnitz was the founder of the so-called water cure, and that Gräfenberg was the source from which the cool stream originally flowed. According to Plato, the manner of purifying by water is as ancient as the Flood; for this author, in his third book, "De Legibus," affirms that the gods purified the earth by the Flood, for which end they brought it on the earth; and from this opinion sprang the custom of purifying, by immersion, mankind as well as the earth; which opinion is also favoured by Grotius when he discourses of strangers initiated into Judaism by baptism.

In the Vatican at Rome, a colossal statue, eight feet in height, is dedicated to Æsculapius, this being presumably a portrait statue of Antonius Musa, who cured the Emperor Augustus of his defluxions by the aid of bathing. The term employed by the ancient Greeks to signify the cold bath was *psychrolousia* (ψυχρολουσία), and that used by the Romans *piscina*. In Greece and Rome hydropathy was raised to the dignity of a science. By the application of water in various forms, these nations believed that health could not only be preserved, but also most diseases cured. The Greek and Roman baths were sumptuously fitted up, and consisted of two parts, the hot air or hot water bath, and the cold bath. It was customary for the ancients first to bake or parboil themselves, and then suddenly to plunge into cold water. This custom has been revived in the modern Turkish bath.

It is very difficult, often impossible, to pursue the trail of knowledge. Customs which at first sight appear peculiar to one period and to one country, are found, on more extensive inquiry, to have prevailed at various periods and in countries widely removed from each other. So much is this the case with regard to habits and modes of life, that we are almost forced to conclude that civilisation is not due to a uniform spreading from one centre, but to an amalgamation and spreading from several centres. This is especially true of bathing. The celebrated William Penn, the founder of Pennsylvania, found a system of hot and cold bathing in full force among the Indians of that state in 1700; and baths closely resembling the Indian ones have been discovered in our own islands during the present century. The Roman occupation sufficiently accounts for a knowledge of hot and cold baths in Britain, but it is difficult to understand how the aborigines of the American continent came by their information. The most remarkable circumstance, perhaps, consists in the identity of the primitive Indian and British baths. They were very rude, but nevertheless very effective. In both cases they were composed of oven-like chambers as air-tight as possible, into which red-hot stones were thrust; the stones in some cases being covered with green leaves. When the patient was in a state of profuse perspiration, he emerged and soused himself in a neighbouring pool or river, the colder the better. The cold baths of the poorer Romans, according to Horace and Seneca, consisted of simple springs which were not even covered over; and this habit of immersion in open springs, rivers, or lakes, for the cure of divers diseases, obtains in Britain even at the present day. In fact, it is not six months since we read in the public prints of a bevy of lame and halt individuals who assembled on the banks of a Scottish lake to be immersed at the witching hour of twelve. This is but an imitation and repetition of the rites performed at the famous pool of Bethesda. Diodorus Siculus informs us that the first Egyptian king bathed and adorned himself in his royal robes before he went to sacrifice; and Porphry affirms that the ancient Egyptian priests, in performing extraordinary sacrifices, bathed three times a day. Diogenes Laertius, in the Life of Plato, mentions a cure effected by Egyptian priests by bathing in salt water, it being a general belief at that time that salt water purified both body and soul, *ϑάλασσα κλύζει πάντα τῶν ἀνθρώπων κακά.*

The Israelites during their captivity in Egypt are represented as frequently bathing. They were also (Ezekiel xvi. 4) in the habit of washing their new-born children in salt and water—a custom which likewise prevailed throughout Asia. Hippocrates, in his treatise on Ancient Physic, states, "If any person in health cools himself very much in the winter time, either by bathing in cold water or otherwise, the more he is cooled (if his body be not perfectly congealed), the more vehemently he will become hot when he puts on his clothes again and comes into a house."

Agathinus describes the good effects arising from the application of cold water very succinctly. He says, "They who desire to pass the short time of life in good health ought often to use cold bathing, for I can scarce express in words how much benefit may be had by cold baths; for they who use them, although almost spent with old age, have a strong and compact flesh, and a florid colour in their face, and they are very active and strong, and their appetites and digestion are vigorous, and their senses are perfect and exact; and in one word, they have all their natural actions well performed."

Dion Cassius informs us that Musa prescribed the *hydroposia* (the internal administration of water and medicine) as well as the *psychrolousia* (cold bath) when he cured Augustus.

Various other passages in favour of bathing might be adduced from the writings of Homer, Suetonius, Seneca, Pliny, Cælius Aurelianus, Galen, Ægincta, and Ætius; but a sufficient number have been cited to prove that from the earliest times, all nations have had more or less faith in the efficacy of the bath, alike in health and disease. What every one believes is usually, although not necessarily, true. Tested by time and experience, bathing has certainly braved the ordeal, and is entitled to a high place in the healing art. Bathing and drinking of water formed part of a very old system of treatment—the other parts of the system consisting of *exercise and moderate living*.

Hippocrates recommended hot and cold bathing as part of his gymnastic art, the cold water to be employed after the exercise of the *palæstria;* the hot, after other exercises ("Third Book of Diet"). The spring used after hot bathing and moderate exercise at Rome, was an exceedingly cold one, called *Virgo*. In it the *athletæ* were wont to lave their manly limbs.

Paulus Ægineta commends cold baths, and advises the bather to use an exact diet and convenient exercise.

The emperor Alexander Severus adopted this plan, for Lampridius states that this potentate drank cold water in the morning *fasting*—that he ate sparingly in the forenoon, and that he engaged in running, ball-play, or wrestling, prior to taking his *piscina* (cold bath). He then ate much bread and milk, eggs and mulsum. This discipline was calculated to make all who had recourse to it strong and vigorous. The process of hardening was well known to the ancient Britons. Cæsar, in his Commentaries, tells us that our semi-savage forefathers daubed their exteriors with paint, and freely exposed themselves to the rigors of the climate, being almost naked. He adds that the Suevi and old Germans (whence the Saxon race) adopted similar practices, being only partly covered with skins. To come nearer home, our own famous countryman, George Buchanan, informs us in his Scotch History, that the Picts went naked and painted their bodies; that the Scotch Highlanders slept upon the snow, or made themselves beds of heath with the flowery ends upwards, which, *mollitie cum pluma certant, salubritate certi superant* (in softness vie with the feather, and in healthfulness greatly exceed it). He further tells us that the inhabitants of the Orcades preserved the vigour, beauty, and largeness of their body, as well as health in their mind, by their observing their old parsimony; and that their ignorance of the nice and luxurious ways of living conduced more for preserving their health than any medicinal art. The passage, "*And that their ignorance of the nice and luxurious ways of living conduced more for preserving their health than any medicinal art,*" is significant. It teaches the present generation a grave lesson. Extravagant, artificial living introduces unheard-of evils into a community. It may be likened to a hollow ball placed upon an inclined plane, which, when once set in motion, runs faster and faster until, coming suddenly in contact with some more solid and sterner stuff, it smashes itself to pieces. It was so with Babylon of old, with Greece, with Rome, and, as recent events have shown, with modern France. Luxurious living had destroyed the thews and sinews of war in those nations—had enervated their men and debauched their women. It occurs to us that Britain is rapidly getting into a somewhat similar condition, and it may become a question (the discussion of which will admit of no delay) whether or not we are in a state to meet our less luxurious and hardier neighbours in the field. This problem is already before the country, and the late military manœuvres in England were expressly undertaken to try the strength of the backbone of the sea-girt isle. There is no folly to compare with that of rivalry in living. Progressive splendid living may not inaptly be compared to the tuning of a harp or other stringed instrument. By pinching and screwing you obtain a higher note—a more brilliant result—but snap go the strings, one after the other, and all is anarchy, confusion, and bankruptcy. How many heart-strings are snapped in this process of tuning or living up, the unfortunate dupes of a suicidal system alone can tell.

It will be evident from the foregoing that the ancients were fully alive to the numerous benefits to be derived from systematic bathing, regular exercise, and a moderate or even spare diet. Their example in these matters is worthy of all imitation.

PRELIMINARY EDUCATION IN THE MEDICAL PROFESSION.—Language is the vehicle, and, to some extent, the producing power, of thought. It may be too much to claim that a good thinker of necessity presupposes an adept in language; but we may safely assume, *other things being equal*, that the accuracy and force of our thought will be in proportion to our knowledge and skill in language. Single words have such diversity of meaning, and phrases such variety of import, depending on their relations to other words and phrases, and often varied by the subject on which they are employed, that two minds of equal capacity, and giving equal heed, may draw different conclusions from the same lecture or the same chapter, and yet both be wrong. A very little knowledge of Latin, my own experience has proved, greatly facilitates our apprehension of the force and import of English words. If so much is not attained already, it should be attempted. A little success will amply repay all the sacrifice it may require. A large number of professional terms in medicine are derived from the Greek; and these often compounded from several roots, of diverse import. Being wholly ignorant of Greek myself, as a consequence I have probably expended more time, during my life, in turning the leaves of all sorts of lexicons, to attain the required elucidation, than goes to the legal term of medical pupilage; and what was very disheartening, sometimes my search was unsuccessful. Though I am far from regarding ignorance of Greek and Latin as an insurmountable bar to fair attainments in our profession, I have little doubt that six months devoted to the study of these languages, under a competent teacher, during pupilage, or even in the early years of practice, would be amply repaid, by increased facilities in learning aright the principles of medicine. The benefit is not all comprised in the disclosure of the literal import of terms compounded from Greek and Latin roots; but in the subjugation of the mind to the power and significance of cultivated language, pervading and irradiating the whole range of study. Indeed, if there be one indispensable prerequisite for the successful study of medicine, it is knowledge and skill in the language in which it is presented to the mind of the student; the master key to all the learning which the same language furnishes for its elucidation.—Dr J. L. CHANDLER, in *Philadelphia Medical and Surgical Reporter.*

ON THE USE OF BINIODIDE OF MERCURY OINTMENT IN SPLENIC ENLARGEMENT.—In regard to this, a correspondent writes as follows:—"I see it is objected that, in the treatment of splenic enlargement by the biniodide of mercury ointment, friction has as much, if not more, to do with the cure than the drug. This view is not borne out by the history of the application, which is curious. About 1855 or 1856, Major Cunningham, at Belliah, a cavalry station near the Terrai, where spleen abounds, was using some ointment of the iodide of mercury to reduce a splint on one of his horse's legs. One of his servants asked for some of the ointment to apply to a friend's spleen. Major C. laughed, and said it would be of no use. "Oh," said the man, "if it will take away bone (alluding to the splint), surely it will take away spleen." The ointment was given. Some time after he again begged a supply of ointment for two friends; and, on being questioned, stated that the former patient had been *cured!* These also were cured; and soon Major Cunningham found every morning after breakfast a number of candidates for the application sitting in front of his house. As the simplest way of doing this, the ointment was kept in a pot, and with a large brush a dab was put over the enlarged organ. Natives not being much pushed for time, and fond of gossip, they used to sit for an hour or more in the sun comparing notes, with their stomachs exposed to the sun in order not to soil their clothing. It was soon found that this generally produced vesication, and that such cases did best. Major Cunningham let his plan be known; it was adopted in all spleen localities, and with very wonderful success. Ptyalism *very rarely* occurred; and, when it did, was not found to be injurious."

SMALLPOX still prevails amongst us. During December it constituted 17·3 per cent. of the entire mortality in Edinburgh, 31 per cent. in Leith, and 38·8 per cent. in Dundee—the other principal towns suffering to a much smaller extent, Paisley and Greenock having no fatal cases at all. Upwards of 200 smallpox patients are now in hospital, and its treatment is costing the city £1000 per month. Is prevention a myth? or is it simply not believed in?

The introduction of smallpox from Leith, Dalkeith, etc., into the

Infirmary and King's Stables Hospitals cost certainly no little money; and we are now paying handsomely for the treatment of an epidemic, the advent of which has assuredly been hastened, if not caused, by want of faith in prevention.

We have much pleasure in presenting to our readers the following report of the Alloa Cottage Hospital for the past year. This hospital has been in existence for three years, and the number of the cases treated during last year is just double that of the first, showing the acceptance in which it is held by the population among whom it is placed. The economy of these small hospitals may be learned from the fact that the expense per case has been always little above £3; this year it is only £3, 10s.

Tabulated List of Cases treated in the Alloa Cottage Hospital from October 1870 to October 1871.—Peter Brotherston, F.R.C.S. Ed., Surgeon.

No.	Name.	Age.	Sex.	Residence.	Disease.	Date of Admission.	Result.
1	W. D.	24	Male	Clackmannan	Disease of knee joint—joint excised	July 28, 1869	Died Nov. 14, 1870.
2	R. T.	44	„	Blairingone	Compound comminuted fracture of left humerus, and simple fracture of radius and ulna, and extensive wound of right ham	„ 2, 1870	Cured Nov. 14, „
3	J. A.	44	„	Alloa	Ulcer of leg	Aug. 9, „	„ Nov. 1, „
4	A. M.	—	„	Alva	Compound comminuted fracture of left thigh and right arm—both amputated	„ 15, „	„ Oct. 20, „
5	M. S.	22	Female	Sauchie	Acute ulcer of right leg	Sept. 7, „	„ Nov. 15, „
6	J. D.	13	Male	Alloa	Fracture of both bones of left leg	„ 7, „	„ Jan. 5, 1871.
7	H. C.	32	„	,	Fracture of forefinger, and injury to hand—finger amputated	Oct. 15, „	„ Dec. 2, 1870.
8	J. S.	24	Female	„	Varicose ulcer of right leg	„ 24, „	„ Dec. 3, „
9	G. H.	14	Male	Sauchie	Left leg destroyed and right knee lacerated—leg amputated	„ 28, „	In Hospital.
10	T. S.	63	„	Alloa	Destruction of three fingers of right hand, and laceration of forefinger—fingers amputated		Cured Dec. 20, 1871.
11	G. A.	11	„	Collyland	White swelling—amputation of right leg	Nov. 8, „	In Hospital.
12	J. S.	46	„	Alva	Whitlow—amputation of right middle finger	„ 15, „	Cured Jan. 20, 1871.
13	H. L.	61	Female	No fixed resid.	Inflamed bunion	„ 15, „	„ Nov. 29, 1870.
14	W. L.	58	Male	Sauchie	Amputation of thumb	Dec. 3, „	„ Jan. 2, 1871.
15	P. M.	11	„	Alva	Concussion of brain	„ 8, „	„ Dec. 19, 1870.
16	W. R.	15	„	Alloa	Destruction of middle and ring fingers of left hand—fingers amputated	„ 17, „	„ Feb. 9, 1871.
17	A. D.	16	„	Whins	Destruction of right arm—amputated	„ 20, „	„ Mar. 18, „
18	J. R.	29	„	Clackmannan	Morbus coxarius	Jan. 4, 1871	Reliev'd Jan. 21, '71.
19	A. C.	23	„	Whins	Exostosis of distal phalynx of left great toe—exostosis excised	„ 9, „	Cured Jan. 21, 1871.
20	M. S.	22	Female	Sauchie	Phlegmenous erysipelas of right hand and arm	„ 30, „	„ June 20, „
21	R. R.	48	„	Devonside	Ovarian dropsy	Feb. 7, „	Incurable.
22	W. M.	14	Male	Dollar	Amputation of finger	„ 14, „	Cured Mar. 11, „
23	J. F.	11	„	Alloa	Stone in the bladder—lithotomy	Jan. 26, „	„ May 5, „
24	E. S.	14	Female	Clackmannan	Two fingers destroyed, and amputated	Mar. 4, „	„ Mar. 29, „
25	R. F.	17	Male	Clackmannan	Open joint of middle finger of left hand—amputation of finger	„ 4, „	„ Mar. 25, „
26	J. D.	9	„	Sauchie	Gelatinous degeneration of left knee joint	„ 7, „	In Hospital.

No.	Name.	Age.	Sex.	Residence.	Disease.	Date of Admission.	Result.
27	J. F.	11	Female	Collyland	Morbus coxarius	Mar. 14, 1871	Cured July 31, 1871
28	W. P.	50	Male	Alloa	Carbuncle of right hip, ending in fistula—operation for fistula	Jan. 23, „	„ Mar. 21, „
29	T. K.	30	„	„	Rupture of lateral ligaments of right ankle joint	Mar. 28, „	„ May 13, „
30	J. H	22	„	Fishcross	Encysted tumour of left thumb—excised	„ 29, „	„ April 7, „
31	H. M.	27	„	South Alloa	Extensive contusion of right elbow, with fracture of condyles of humerus	„ 29, „	„ May 17, „
32	J. D.	66	Male	Blairlogie	Irritable sloughing ulcer of right ankle joint, extending up the leg—leg amputated above knee	April 1, „	Died June 18, „
33	J. A.	25	„	Alva	Fissure of anus, with contraction of sphincter muscle—division of sphincter muscle	„ 8, „	Cured April 21, „
34	M. M.	34	„	Seaman	Fracture of sternal end of right clavicle	„ 21, „	„ April 28, „
35	A. G.	13	„	Alloa	Severe laceration of left thumb—amputation	„ 21, „	„ „ „
36	J. M'B.	16	Female	„	Destruction of right little finger and distal phalynx of right ring finger—amputation	„ 22, „	„ May 12, „
37	L. A. J.	38	Male	Seaman	Injury to right ear and temple	„ 27, „	„ May 1, „
38	S. H.	22	„	„	Pneumonia	May 2, „	„ May 6, „
39	J. F.	40	„	Alva	Blind from amaurosis—bursal swelling of right knee, and disease of right elbow joint	„ 13, „	Died June 14, „
40	W. D	16	„	Alloa	Hydrocele—tapped	„ 15, „	Cured May 24, „
41	A. F.	57	Female	(U.S. America) Tillicoultry	Disease of lumbar vertebræ—the actual cautery applied	June 2, „	Relieved July 6 „
42	J. S.	53	Male	Tillicoultry	Extravasation of urine—deep incision into the perineum	„ 7, „	Cured July 12, „
43	A. F.	22	„	Alloa	Simple fracture of right tibia and fibula through upper third	„ 17, „	„ July 29, „
44	H. P.	35	„	„	Fracture of fore arm and destruction of left thumb—amputation of thumb	„ 22, „	„ July 18, „
45	J. P.	18	„	„	Rupture of left saphena vein, and extensive extravasation of blood	July 6, „	„ Aug. 9, „
46	M. M.	—	Female	Tillicoultry	Strangulated hernia of omentum and bowel	„ 7, „	„ July 18, „
47	W. M.	20	Male	Devonside	Compound fracture of right ring finger—amputated		„ May 18, „
48	J. S.	26	Female	Clackmannan	Chronic rheumatism	May 10, „	Much relieved.
49	J. W.	26	Male	Alva	Chronic enlargement of right testicle with sinuses—extirpation of testicle	June 20, „	Cured Aug. 9, „
50	W. P.	23	„	Devon village	Double fracture of tibia and fibula of left leg	„ 30, „	„ Aug. 11, „
51	L. U.	—	„	Sweden	Injury to tibiæ	July 25, „	„ Aug. 4, „
52	W. P.	42	„	Alva	Varicose ulcer of right leg	Aug. 7, „	„ Sept. 7, „
53	D. M.	15	Male	Alloa	Fracture of left thigh	„ 15, „	In Hospital.
54	G. W.	56	„	Coalsnaughton	Cancerous tumour of right cheek—excised	„ 23, „	Cured Sept. 4, „
55	J. M.	49	„	Alva	Epithelial cancer of lower lip—removed by excision	Sept. 6, „	„ Sept. 9, „
56	H. B.	48	„	Fishcross	Necrosis of distal phalynx of right forefinger — phalynx removed	„ 6, „	„ Sept. 9, „
57	J. C.	20	„	„	Constitutional ulcer of left leg	„ 11, „	In Hospital.
58	A. M.	8	Female	King o' Muirs	Disease of left elbow joint	„ 11, „	„
59	J. S.	18	Male	Tullibody	White swelling of left knee—amputation of thigh	„ 14, „	„
60	J. W.	26	„	Alva	Poriostitis of both tibiæ	„ 18, „	Relieved Sept. 23.
61	T. M.	47	„	South Alloa	Compound fracture of metacarpal bones of fore and middle fingers	„ 27, „	In Hospital.
62	J. F.	9	„	Sauchie	Deformity of both tibiæ—apparatus applied	Oct. 2, „	„
63	J. B.	—	„	Alloa	Disease of left ankle joint—amputation of leg	„ 9, „	„
64	H. S.	—	Female	„	Chronic bronchitis	Sept. 13, „	„

Remarks on the foregoing Cases.

No. 1.—Died of Bright's disease of the kidney.

No. 2.—This patient injured by a railway waggon which knocked him down and passed over him.

No. 4.—This patient, knocked down and run over by a railway train at Menstrie, was conveyed to the Hospital, and made a wonderful recovery.

No. 9.—This patient, injured by the fall of a mass of coal upon him, made an excellent recovery so far as concerned the amputation, but cicatrization of right leg being prevented by extensive sloughing, transplantation of skin was resorted to with satisfactory results, and the wound is now healing.

No. 11.—This boy's amputation has long since healed; but he has a scrofulous diathesis, and has been long in Hospital in the hope that he may improve under nutritious diet.

No. 15.—This patient injured by falling into the graving dock, and was conveyed to the Hospital in a state of complete coma.

No. 17.—Machinery accident. Entire integuments of arm from shoulder to wrist torn off, along with the hand. Arm amputated at shoulder joint.

No. 23.—The operation of lithotomy performed in presence of Dr Gillespie, President R.C.S.E., and Drs Duncanson, Walker, and M'Fadyen, and patient made a rapid recovery.

No. 26.—This boy is gradually improving, with a stiff joint.

No. 31.—This case made an excellent recovery. It would have been impossible to have treated him properly in his own lodgings.

No. 32.—Amputation of the leg was necessary, but from the age of the patient and his irritable constitution, sloughing took place, and he died three months after the operation.

No. 35.—Out-patient.

No. 38.—Dr Duncanson's case.

No. 39.—Died of Bright's disease of the kidney.

No. 42.—This patient made an excellent recovery.

No. 45.—This lad was injured by a piece of wood, thrown out from a saw-mill, which struck him with great violence on the thigh under the right groin. An immense thrombus was the result. He made an excellent recovery.

No. 49.—This patient made a good recovery.

No. 61.—Dr Duncanson's case.

OBITUARY.—On the 27th of December, there passed from amongst us one whose shrewd but kindly face will long be missed by the bedside of many an invalid. Privileged beyond most men, Mr Charles Sidey, at the age of 75, was still apparently hale and hearty, and as indefatigable in the discharge of his professional duties as he had ever been in the days of his youth. Within a few hours of seeing his last patient, he himself was called whither there is no more sickness. Of him it may literally be said that, like the patriarch of old, "after he had made an end of commanding, ... he gathered up his feet into the bed, and yielded up the ghost, and was gathered unto his people." He has left behind him a very large circle of sorrowing friends, besides a widow and family—one of his sons, Dr James Sidey, being well known as one of the Vice-Presidents of the Obstetrical Society of Edinburgh.

THE CHRISTISON BANQUET.—On the 23d instant, Sir Robert Christison will have attained the fiftieth anniversary of his induction as a Professor of the University of Edinburgh, and it has been resolved to celebrate the occasion by a public dinner. The chair will be occupied by the Right Honourable John Inglis, Lord Justice-General of Scotland; while the croupiers will be Sir W. Stirling-Maxwell, Lord Rector of the University; Principal Sir Alexander Grant; Dr Robert Paterson, President of the Royal College of Physicians, Edinburgh; William Walker, Esq., President of the Royal College of Surgeons, Edinburgh; and Dr J. E. Fleming, President of the Faculty of Physicians and Surgeons, Glasgow : while the list of stewards comprises some of the names best known in connexion with almost every University of Great Britain. There is no man now alive who has better deserved this public recognition of his services, whether we regard them as being given in the cause of science, or in furthering the prosperity of the distinguished University which has had the privilege of so long possessing as one of its Professors one so widely known as the most lucid of teachers, a most accomplished and profound physician, and a most eminent man of science; and we anticipate for the banquet a success equal to its occasion.

SIR JOHN ROSE CORMACK.—When Dr Cormack, four years after his graduation, founded this Journal, he little thought that his later years were to be involved in so much misery and bloodshed as he has just come through. We congratulate him heartily on his knighthood as a public recognition by our Queen of his devoted services to suffering humanity—services whose value is not lessened by the fact that he voluntarily shared the starvation and misery of two sieges for the sole purpose of doing his best to relieve the sufferings of those who were not compatriots but only fellow-men. Truly he is a good Samaritan.

PRESENTATION.—William Turnbull, M.D. Edin., Consulting Physician to the Huddersfield Infirmary, several reports of which he has furnished to our pages, has just received from his friends a most gratifying testimonial in acknowledgment of his fifty-five years' gratuitous services to that institution.

THE HONOURS TO DR JENNER AND DR GULL.—It is officially announced in last night's *London Gazette* that the Queen has given orders for the appointment of Sir William Jenner, Bart., M.D., one of the Physicians in Ordinary to Her Majesty, to be a K.C.B.; and Her Majesty has also conferred the dignity of a Baronet upon Dr William Withey Gull and his heirs male.—*Scotsman*, Jan. 25.

Part First.

ORIGINAL COMMUNICATIONS.

ARTICLE I.—*On Simple Menorrhagia and Simple Metrorrhagia.* By J. MATTHEWS DUNCAN, M.D.

As these two diseases cannot be well separated or diagnosed from one another, we consider them simultaneously. Only we may premise, that our remarks are intended to apply chiefly to the menorrhagia, which is probably far the more frequent.

The words menorrhagia and metrorrhagia are very often used in a vague way, having no precise meaning attached to them. Simple menorrhagia is excessive menstruation, or extraordinary loss of blood at monthly periods, occurring in cases where there is no other uterine disease to account for the great bleeding.

Menorrhagia is to be distinguished from metrorrhagia. This latter term implies only bleeding from the womb. Metrorrhagia may or may not be menorrhagic. If it occurs at a menstrual period, or in connexion with ovulation, it is properly designated menorrhagia. In short, metrorrhagia at a monthly period, or in connexion with ovulation, when there is no other disease to account for the bleeding, is menorrhagia simplex.

We do not here treat of complicated menorrhagia or metrorrhagia. Of these diseases examples are frequent. The flow of blood in such cases if metrorrhagic, or, so far as it is excessive, if menorrhagic, may be a symptom of the uterine disease which it complicates. Thus menorrhagia or metrorrhagia may be a symptom of cancer of the womb, of ulceration of the cervix, of polypus, of fibrous tumour, of ovaritis.

As ovulation and menstrual flux are very rarely observed during pregnancy, we shall not consider menorrhagia in this state, but regard it as implying the unimpregnated condition.

Menorrhagia, thus defined, is a disease which can never be diagnosed with exactness from metrorrhagia, even supposing it is admitted that the bleeding is not a symptom of some other uterine disease. The absence of other uterine disease may be made out with a degree of assurance varying with the skill and experience of the observer; but no amount of skill and experience can give much assistance in diagnosing simple menorrhagia from simple metrorrhagia. This arises from the circumstance that we do not know, with any approach to certainty, when a woman is ovulating and when she is not. But though we cannot attain to exactness in the matter, we may in practice have considerable assurance in regard to it. We judge that the loss of blood is menstrual or connected with ovulation—that is, with temporary hypertrophy of the mucous membrane of the cavity of the body of the uterus—from circumstances which are familiar to women generally. These are, *first*, the occurrence of the bleeding at the regular and expected times; *second*, its occurrence with the ordinary symptoms usually observed in each case; *third*, the absence of any other cause of the discharge. No doubt, a flow may be menorrhagic, not merely metrorrhagic, when all these conditions are awanting, but then it cannot be diagnosed at all as menorrhagia; and, on the other hand, the occurrence of one or the concurrence of two or three of these conditions, gives a proportionally greater and greater degree of assurance as to the menorrhagic nature of the case. This distinction is one not merely of theoretical value, but may be also of practical importance for various reasons. For instance, it is thought injudicious to use means with the view of arresting quickly a slight menorrhagia whose appropriateness to a case of mere metrorrhagia would not be disputed.

A question of considerable nicety arises in regard to the less severe and more numerous class of cases of menorrhagia—namely, Is the loss of blood excessive? If symptoms of loss of blood or of chlorosis exist, are they produced by the loss of blood in menstruation? For the settlement of this point, every case must be judged to a great extent by itself. A loss may be considerable only because long continued, or only because frequently repeated. A loss may be considerable in a weak, delicate woman, which would not be considerable in a robust and healthy female. Women vary extremely in the amount of blood they lose at monthly times: a loss which in one woman would be justly regarded as excessive or menorrhagic, might in another be regarded as an ordinary amount, or even as a scanty menstruation. In every case of anxiety or difficulty, the practitioner should not be satisfied with mere reports of the amount lost, or of the number of cloths which the woman uses; but he should inspect the cloths, forming his own judgment as to the amount lost, and thus also getting an opportunity of observing the richness of the blood discharged. A chlorotic or anæmic woman discharges blood which produces a comparatively pale stain on the cloths. A menstrual flow in a healthy woman may vary as to the amount of colouring matter or globules discharged in it. Pale bloody discharge occurs sometimes in robust women, and is therefore, in itself, not a sufficient indication of chlorosis or anæmia.

Very many women attach great importance to the occurrence of clots in the discharge, and the practitioner, if not well-informed and on his guard, is likely to have communicated to him indirectly an exaggerated idea of their size. It is well known that generally no clot appears in the menstrual fluid as it comes from the vagina. As blood flows in moderate quantity through this tube, its coagulability is destroyed and its colour somewhat changed by contact or mixture with the acid mucus naturally found in this part. But small clots, insignificant so far as the amount of blood in them is concerned, are frequently observed, and, as already said, often cause great alarm. They are easily accounted for in various ways. They may be discharged from the uterus itself, where there is no acid to prevent the blood clotting. They may be formed in the vagina when mucus is deficient, or when some space occurs where a little blood may accumulate, and lie for a time without coming in contact with the vaginal walls.

Large clots are always important. They indicate a severe menorrhagia. They may be formed outside the vagina, that is, on the cloth, after the blood has quickly passed through this canal, or has passed through it while already coated with a layer of blood, protecting the inner current from contact with the vaginal walls. But such large clots are frequently formed in the vagina, and are generally discharged with peculiar feelings of faintness.

Not rarely, in cases of this kind, there are discharged flakes or films of more or less decolorized blood-clot. These the patient sometimes remarks and collects; besides, she perhaps washes them, and, enclosing them in a bottle, brings them to her physician. She probably calls them "skinny" discharges, and the practitioner may be misled into supposing they are bits of the membrane of dysmenorrhœa. From this they are easily distinguished, and frequently their larger quantity alone is sufficient for this purpose. They are generally discharged towards the end of the menstrual period, and are probably detached portions of a layer of blood which may have adhered to the wall of the vagina for some time, and have become firm and somewhat decolorized.

Menorrhagia or metrorrhagia may be produced by various causes, or are specially liable to occur under certain conditions. In early life, at the first appearance, or among the earlier returns of the menses, and again in more advanced life, when ovulation and menstruation are about to cease, the female is apt to lose excessively; and such hæmorrhages generally occur at monthly times. In women recently married, or during excess of venery, menorrhagia is not rare. Among the former it sometimes occurs as a single attack, following a brief period of amenorrhœa; and in these circumstances it is frequently mistaken for abortion. A state, which may sometimes be called relaxation of the womb, occurring in women enervated by long suckling, or by too often or too rapidly repeated childbearing, is a common cause of menorrhagia. The morbid condition of a patient labouring under fever—especially, I think, variola—is occasionally accompanied by menorrhagia or metrorrhagia. The same is true of those morbid states of the abdominal viscera, especially of the liver, which produce hæmorrhoidal congestion. One of the most frequent causes of this affection is that morbid condition of the blood, in which it is thin and watery, the woman being chlorotic or anæmic, or labouring under some form of Bright's disease of the kidneys. In this last set of cases we have a fine example of that vicious circle often observed in disease: the anæmia is increased by the menorrhagia, and the menorrhagia is increased by the anæmia. In such circumstances the coming on of amenorrhœa should be regarded as salutary and conducive to recovery; but it is certain that most women, and some physicians, would not so consider it.

Menorrhagia and metrorrhagia are frequently associated with other diseases which may or may not have an accompanying series of symptoms; but there is no symptom peculiar to the disease itself. The loss of blood in this way will produce, according to its amount and rapidity, the symptoms of anæmia, which it would be out of place here to describe. As I have already said, the amount and character of the discharges should be actually investigated by the physician himself, in every case of difficulty or anxiety.

These diseases are generally chronic, and frequently slight in degree or amount of blood lost, and diagnosis is often not carefully made. This is scarcely to be called an improper neglect, and finds an easy justification, if the patient is a virgin, on account of the disagreeable and painful character of the process of diagnosticating. But in every case which has grave character from the amount of the loss, its long continuance, or its influence on the constitutional health, a careful diagnosis should be made.

The diseases with which simple menorrhagia or simple metrorrhagia may be confounded are those uterine maladies which are accompanied by hæmorrhage; namely, abortion, ovaritis, ulceration, polypus, fibrous tumour, cancer.

It would be quite out of place to enter here on the physical characters of these various diseases, which are the grounds of the distinction to be made. These physical characters are to be found described under the heads of these diseases. But a few remarks require to be made.

The diagnosis is, in all cases, to be effected thoroughly only by a physical examination of the pelvic organs per vaginam. In cases of simple menorrhagia or metrorrhagia, the uterus is found to be of natural size, or very nearly so; of natural form; mobile; in its natural situation; and not tender. The ovaries are not to be felt, or if felt, are not enlarged or tender.

To diagnose these affections from abortion, it is necessary for the practitioner to call upon his knowledge of the signs and symptoms of pregnancy. In very early pregnancy, some doubt may sometimes remain even after a physical examination; and in most such cases the practitioner should adopt the safe course of admitting the possibility of pregnancy. Time will soon come to his aid in completing the diagnosis, and meantime his treatment may be conducted in a manner to fulfil every indication whether the woman be impregnated or not, for the treatment in either case is nearly the same. Of course, while doubt remains, and the continuance of the presumable pregnancy is desirable, the use of ergot of rye in every form will be avoided.

The presence of simple ulceration of the cervix may be suspected if there is, during the absence of the bleeding, a muco-purulent or purulent discharge, if the bleeding is long continued at one time, or if it is brought on by slight mechanical causes, as sexual connexion or digital examination. The velvety feeling of the cervix, its patulous condition, its slight enlargement, felt by the examining finger, may confirm the suspicion that ulceration is present; but a visual examination alone can make the diagnosis of ulceration certain. Yet in many cases it is not necessary nor expedient to seek to arrive at certainty; for it may be desirable to avoid the use of the speculum.

The diagnosis of polypus is generally made very easily by a digital examination. But cases occur in which further inquiry is demanded, and the method of proceeding is fully described under the head of polypus of the womb.

In diagnosing simple menorrhagia or metrorrhagia from the bleeding occurring in connexion with a large uterine fibroid, difficulty can scarcely occur. But, on the other hand, it is impossible to diagnose the absence of a small fibrous tumour which does not produce deformity of the uterus that can be felt. And, again, the diagnosis of one, not of the smallest dimensions, is often a matter of difficulty. The points to be sought, as indicating the absence of any fibroid, are natural shape and dimensions and mobility of the womb, so far as these points can be made out.

The diagnosis from cancer in an early stage may be a matter of considerable difficulty, especially if suspicion of malignant disease is not excited by the presence of pain and of thin or watery discharge when the flow of blood is absent. The circumstance that menorrhagia or metrorrhagia is frequently the first symptom of cancer of the uterus, is sufficient to keep the well-informed practitioner on his guard. It is by the physical characters of the cervix that he must be guided; and as these characters in the early stage of cancer are exceedingly variable and little known, the uncertainty of diagnosis can be easily appreciated. When the diagnosis is difficult it will be of little value. The characters chiefly to be relied on as indicating the supervention of malignant disease are the following:—hardness generally of a peculiar kind, suggesting brittleness or friability (a kind of hardness sometimes felt in cervix which has been long maltreated by caustics); enlargem with or without hardness, but soon characterized by hardness at least in parts, and often in a sort of rim around the enlarged part; rapid growth of the enlarged part; small ulcerations, which are sometimes the result of small superficial sloughings, and which heal rapidly; more extensive ulceration, not yet of a characteristic kind, not accompanied by circumambient induration, but having overhanging unhealthy edges. Unfortunately for the poor sufferers from cancer, time will soon remove all doubt as to the nature of their disease.

The treatment of simple menorrhagia and of simple metrorrhagia is a very easy matter, so far as it goes. It is divided into the treatment before the loss begins, and the treatment while the loss is going on.

The former treatment, that before the loss begins, is only possible in chronic cases, or cases where there has been at least one previous hæmorrhage; for in any other its occurrence has not been and cannot be foreseen. It consists in the application of remedies to any condition which may appear to predispose to, or to aid in maintaining, the complaint. Congestion of pelvic vessels may be diminished by saline laxatives. Congestion of the portal system may be diminished by so-called antibilious medicines. A state of anæmia may be diminished by the use of chalybeate medicines. The general health may be improved by remedies or by hygienic regulations.

The great treatment or chief treatment is that applied during the continuance of the flow. It is of various kinds.

Mechanical treatment is most valuable, and probably as efficacious as any other. It consists, first, in maintaining rest in the horizontal position. By this means the pressure of blood on the vessels of the uterine mucous membrane is diminished, and the bleeding proportionally discouraged. This treatment is favoured by keeping the patient cool. It is applicable in every case. A second kind of mechanical treatment, that by the vaginal plug, is only applicable in severe cases in women who have cohabited, or in the very severest cases where cohabitation has not occurred. This remedy discourages the bleeding by impeding or resisting its escape. The vaginal plug generally resorted to in cases of simple menorrhagia or simple metrorrhagia is of an imperfect kind, yet often efficient: that is, it is not sufficient absolutely to prevent or arrest hæmorrhage which proceeds with any great force, as would be the case, for instance, were an artery opened by incision; but when the hæmorrhage may be, as it often justly is, likened to an oozing, its action is powerful enough to arrest it. This imperfect plugging is effected by pushing adroitly into the vagina a piece of sponge as big as the fist when not compressed, or even bigger. For the sponge, bits of lint may be substituted, and inserted one after another. It is common to dip the plug, before using it, in vinegar and water, or in a weak solution of alum. It is, no doubt, possible to explain the action of the plug, by supposing that it excites contraction in the muscular tissue surrounding the uterine vessels, which contraction will restrain the hæmorrhage; but the purely mechanical explanation is more in accordance with ordinary medical thought. The plug must be removed in twelve, or, at most, twenty-four hours, and a new one placed, if it is required. More thorough and powerful plugging is very seldom used in cases of the kind under description. To effect it, the vagina is crammed with pieces of lint so as completely to occlude it. Each piece is, when rolled up, about the size of a walnut, and is introduced separately as high as it can be pushed. If the lint is previously dipped in a solution of perchloride of iron, the plug is more efficient, probably because it soon gets hard in the vagina, and more powerfully resists the tendency to hæmorrhage. But this dipping in solution of perchloride of iron makes the plug more difficult and painful to remove.

Another kind of treatment resorted to only in extreme cases is probably also mechanical in its action. This consists in painting the bleeding surface—that is, the mucous membrane of the cavity of the body of the uterus—with perchloride of iron. A syringe, containing about a drachm of the pharmacopœial solution or liquor of perchloride of iron, is fitted to a hollow uterine probe after it has been passed up to the fundus uteri; the iron is then gently injected into the uterine cavity; only what is easily thrown in being passed. This hardens and destroys the mucous surface, and so arrests the oozing hæmorrhage. The superficial layer of mucous membrane is sometimes subsequently thrown off like the membrane of dysmenorrhœa. I have observed the application and efficiency of this remedy with the naked eye in a case of chronic inversion of the uterus, with excessive menorrhagic loss.

The local application of cold is much esteemed as a remedy by many practitioners, but I have so often seen it fail, and so often seen it apparently increase the loss, that I am very doubtful as to its real value. Cold is, with this view, applied to the lower part of the belly, the vulva, the insides of the thighs, and occasionally even to the interior of the vagina and rectum. It is done by using cloths, wrung out of cold or iced water, and frequently rewetted and reapplied, or by the use of suitable mackintosh or indiarubber bags filled with pounded ice. To the inside of the vagina and rectum cold is applied by injection of iced water, or by the insertion of pieces of ice whose edges are well rounded. This use of cold is probably derived from the application of the same remedy in post-partum hæmorrhage. When used in post-partum hæmorrhage, as it is in cases of simple menorrhagia, its value has always appeared to me very doubtful. But in cases of post-partum flooding it has another invaluable application, which is probably the parent of all the comparatively inefficient uses of it which we have described or referred to. Its sudden application, acting diastaltically or through the reflex system of nerves, will often excite an obstinately inert uterus to activity at once when friction and kneading of the uterus have failed; and this single excitement of uterine action may be sufficient. After this result of suddenness of application is gained, the repeated use of it, or its continued use, is comparatively inefficient; and it is this continued use only which is resorted to in cases of menorrhagia or metrorrhagia.

The lapse of hours or days, during which the patient rests, brings the arrestment of most cases of simple menorrhagia or simple metrorrhagia. At the same time the physician administers remedies, and while he thus comforts his patient, himself blindly supposes he is contributing to what he calls her cure. It is the so-called hæmostatic medicines that are universally resorted to in cases of this kind. There is nothing worthy of the name of evidence to show that they act. Like my brethren, I use them, and believe they have some slight influence in diminishing or arresting the discharge. They comprise the mineral acids, especially the sulphuric, ergot of rye, digitalis, gallic and tannic acids, and many others.

Dilute sulphuric acid is the hæmostatic medicine in which I have most confidence. It is often given in the form of the infusion of roses. To find what it can do, it may be necessary to use it freely. From ten to twenty drops properly conveyed may be given from four to eight times daily.

Ergot of rye and digitalis I have used in many ways, and, having no reason to prefer one way to another, must leave the details of their administration to the intelligence of the practitioner or to his caprice.

The chances of therapeutical benefit to the patient may be increased by combining the ergot of rye with the dilute sulphuric acid, or the digitalis with the same.

Gallic acid is probably more extensively used during the loss in these diseases than any other remedy. It is given in doses of from ten to twenty grains three or four times daily or oftener. It has the advantage over the mineral acids of not setting the teeth on edge; but it is, I believe, far less useful than they are. The same remarks apply to tannic acid.

ARTICLE II.—*The Treatment of Heart Disease.* By J. MILNER FOTHERGILL, M.D., Vienna.

Removal of Causation.

IN the rational treatment of diseases of the heart—an organ acting to a great extent mechanically—it is obvious that the removal of the exciting cause, where practicable, must form the first step in the treatment. Nextly would come, very naturally, treatment calculated to improve the condition of the heart itself; and, thirdly, the removal of those distressing sequelæ which usually announce its presence, and invariably embitter the last stages of the patient's existence, if not avoided by sudden death; which, however awful to the patient to think of, is not so regarded by the physician familiar with the suffering thus averted. In this order, then, the writer proposes to consider the treatment of cardiac affections according to the most recent investigations in pathology and therapeutics. It will be necessary, in order to make the subject lucid to all—those who have specially studied cardiology, and those who have had their attention directed to other subjects—to review, to some extent, the different causes in action; a mode which will probably best explain what is to be avoided, either for a time, as in less serious cases, or permanently, where the mischief done is too advanced to be repaired, or even pretty effectually compensated. Thus we find as causes, excessive exertion, Bright's disease, imperfect nutrition, nervous exhaustion, pericarditis, and last, not least, endocarditis, with its consequent valvular lesions, for which there is no repair, and only more or less imperfect compensation, of varying permanency, to be hoped for. To this list must be added syphilis, which is not only a cause of congenital malformation, but affects the muscular structure of the heart itself, as one of its ulterior actions.

Taking them in the above order, we come now to consider the effect of strain on the heart, as the result of violent muscular exertion, *pur et simple*, without any want of nutrition, or other failure, in the heart itself. This is not associated with an active or industrious life, with exertion prolonged as a daily task, a life-long duty, but with violent temporary exertion, the consequence of labour in some forms of industry, or in voluntary effort, as in the gymnast. This cause is seen largely in action in hammermen, who have to put forth all their strength and endurance during the brief period of time that heated iron remains sufficiently hot to be worked. During the process of heating the man is resting, true, but the vascular excitement and heaving respiration tell how severe is the strain to which the viscera have been subjected. Let us consider what the *modus operandi* is here. Firstly, there is violent action of the muscles of the upper limbs, which compress the arteries, and even act more or less across them (the musculo-cardiac function of Wardrop), and form a decided obstruction to the flow of blood from the left ventricle. The same action of the muscles, on the other hand, tends to drive the venous blood towards the heart. The blood is thus collected in the venous centres—viz., the venæ cavæ, right heart, and pulmonic circulation. The chest is also more or less fixed, as having points from which the muscles work. When each "heat" is over, on examination, the "striker" will be found panting, with violent action of his heart, and bounding pulse, gradually subsiding into a balance of the arterial and venous circulations, until the next effort, which is not far distant.

It is obvious that here there is, of necessity, a strain put on all parts, from the obstructed lesser arteries backwards to the aorta, left ventricle, and the truly venous parts, the pulmonary vessels, and right heart. The morbid results manifest themselves in various parts. For instance, in dilatation of the aorta, with atheroma in the distended endarterium; in thickening and distorting the aortic valves, driven together with excessive force; in yielding of the left ventricle; and inevitably in dilatation of the pulmonary artery, with dilatation and hypertrophy of the right ventricle. The last is almost unavoidable, and tends to perpetuate the mischief inaugurated in the left ventricle, thus—the enlarged and altogether bigger right ventricle sends a greater mass of blood through into the left side, and thus the left side is filled under greater pressure, a well-known cause of dilatation of the ventricle. Its contraction, in turn, throws a larger volume of blood into the aorta, and keeps up the condition of over-distension. This excessive aortic distension leads to a fuller supply of blood to the coronary arteries, and full nutrition of the heart. For a time this condition is maintained, but sooner or later the action changes into some distinctly morbid condition. The distended aorta may be ruptured by a blow, and a true aneurism formed by cracking the brittle inner coat;[1] this distension may go on to atheroma and its consequences; the aortic valves may become diseased and imperfect, or the muscular walls may yield.[2] The disease of the aortic valves has a curious effect on the muscular walls. Hypertrophy, and that to an unusual extent, supervenes, but it is not permanent. Mauriac[3] has most ingeniously shown, that when the aortic valves become imperfect, the blood column in the aorta, no longer perfectly arrested in its backward course by the semilunar valves, does not, on the arterial recoil, perfectly fill the coronary arteries, and sooner or later the hypertrophied walls become degenerate from imperfect nutrition. The changes in the arterial system act on the parts behind them; but the venous system not unfrequently is itself the first to yield. Thus, from the pulmonic congestion comes tuberculosis, emphysema, etc.; from yielding of the right ventricle we have dyspnœa on slight exertion, palpitation, and true cardiac asthma. This condition is common among hammermen, colliers—especially when working in constrained positions, which can only be maintained for limited periods, which, however, test their endurance—among gymnasts, etc. When, then, any of the earlier symptoms of heart failure, or failure in the other organs, manifest themselves, it is only too obvious that the form of labour which evokes the failure must be abandoned; for the causes which could induce disease in the healthy heart must have a sadly deleterious action when that organ is commencing to yield, and the various forms of compensation to become imperfect. No measures, however successful in affording relief to symptoms, can be expected to endow these organs with the virtue to resist the stress with impunity. By rest, where practicable, and a change of labour—some new occupation not necessitating violent effort, where labour in some from is unavoidable—the changes in the muscular walls may be greatly modified (in proof of this can be adduced the passing away of the hypertrophy of the left ventricle of pregnancy on parturition[1]); and a return to the normal state more or less completely attained. But if the muscular walls have grown equally with the demand on them, and the changes have commenced in the arteries, nothing known in the present state of medicine can in any way restore them. Here the removal of the cause can alone promise anything, or hold out the hope of a prolonged existence.

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[1] Clifford Allbutt, in St George's Hospital Reports, 1871.

[2] Myers on Diseases of the Heart among Soldiers. Alexandra Prize Essay.

[3] Mauriac, article "Cœur," Nouveaux Dictionnaire, Paris, 1868.

In considering the mode of causation of the heart disease which follows changes in the kidney, great caution is necessary. So common, however, is the change in one organ, on the occurrence of disease in the other, that there can be little doubt as to the fact; as to the mode of production, we may truly be said to be in troubled waters. Soon after Bright published his observations, two divisions of thinkers ensued: one maintaining that the kidney-changes were consequent on the heart disease, and were, in the phraseology of the day, inflammatory products of congestion, or an infiltration of serum capable of being organized into a low form of cell-life; the other maintaining, with Bright, that the heart disease was secondary. Of course, the asthenic congestion consequent upon heart-failure adds to the primary renal trouble, and often profoundly modifies the symptoms; or primary heart-mischief may, by asthenic congestion and its consequences, lead to disease in the kidney, as a result. Renal disease is commonly followed by changes, especially in the left ventricle, or inversely; many cases of heart disease have been preceded by evidence of disease in the kidney, also when renal mischief is established, the changes in the heart follow sooner or later, usually so soon, and so certainly, that the connexion is universally allowed. Various opinions have been, and are yet, held on this subject. The chief thinkers and writers have been Bright, Traube, and George Johnson. Bright thought the flow of the blood was impeded by chemical alterations in it, and thus changes inaugurated. Traube maintained, and yet maintains, that the changes occurred in cirrhosis of the kidney (Nierenschrumpfung), and that the shrivelling, by obliterating many of the renal vessels, led to obstructed flow through the renal artery; and that that again affected the whole arterial blood current, and caused changes in the left ventricle. George Johnson further observed, in this condition, an hypertrophy of the muscular coat of the arterioles generally, and evolved this theory. The walls of the arterioles are largely muscular, and have a "stop-cock" action in altering the calibre of the arterioles, and thus permitting a larger or smaller bulk of blood to pass to the various tissues on the arterial recoil. The retained urine salts in the blood poison it, and the arterioles contract to prevent the entrance of poisoned blood into the tissues. This constitutes an obstruction to the blood current, and changes in the left ventricle are inaugurated. The position of the two theories stands respectively thus:—

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[1] For information on this interesting point, the reader can refer to the observations of Larcher and Ducrest in the Archives of Medicine, Paris, 1859.

TRAUBE.	JOHNSON.
1. Contraction of the kidney.	1. Changes in the kidney, with retention of urine salts.
2. Obstruction to the blood stream.	2. Contraction and hypertrophy of arterioles.
3. Hypertrophy of the left ventricle.	3. Obstruction to the blood stream.
	4. Hypertrophy or dilatation of the left ventricle.

For my own part, I think the explanation given by Johnson better accounts for the various morbific steps, and includes the alteration in the walls of the arterioles, which, it is rather strange, seems unknown to German observers. There are difficulties in the way of each explanation, but Traube's idea of the obstruction to the renal flow being able to react on the whole circulation, is opposed by the whole history of compression or obliteration of arteries equal to the renal artery in bulk.[1] The chief objection, it appears to me, to Johnson's view, is as to the contraction of the arterioles to shut off the blood supply to the different tissues. It commits the holder to a theory of a kind of intelligence in the arterioles, and a perversity in the ventricle. The arterioles close to prevent the entrance of the blood into the tissues, and the heart strengthens to overcome them and force it in. It is easier to comprehend the changes on a slight modification of Johnson's view—viz., that the irritant action of the urine salts excites spasm and consequent hypertrophy of the muscular tunic of the arterioles, and this leads to obstructed flow, and changes in the left ventricle, hypertrophy or dilatation; the condition of the patient being better when the power is there to produce hypertrophy, and drive the blood into the textures, than when dilatation results, and the power to counteract the arteriole spasm is wanting. That the presence of a blood-poison in the tissues is productive of disease and suffering there is no doubt, as, for instance, in genuine gout, arthritis, muscular rheumatism (so called), sciatica, bronchitis, etc. Still, atrophy from spasm is worse, as in muscular wasting, degeneration of the heart walls, etc., from spasm in the arterioles, and impaired nutrition. The connexion of pain with different blood-poisons, as in gout, rheumatism, syphilis, malaria, lead-poisoning, etc., fully justifies the aphoristic sentence of Romberg: "Pain is the prayer of a nerve for healthy blood." The question is growing rather long, but it is of great importance for successful treatment that the different steps in the morbid process be clearly understood, and the dependence of one link in the chain on the preceding one be appreciated. When, then, in this chronic condition we have an exacerbation of the disease, there is an accumulation of the blood-poison, spasm of the hypertrophied walls of the arterioles, and palpitation (the evidence of laboriousness) of the hypertrophied left ventricle. No reader of much experience will feel any difficulty in recalling to mind numerous instances of sudden coldness of the hands or hand, in many elderly persons, with more or fewer of the symptoms of Bright's disease, especially when not feeling so well as usual. It is exactly the same phenomenon, except in causation, as the cold hands or feet in hysteria, where spasm of the arterioles, palpitation, etc., is common. The treatment, by removal of causation, of the cardiac troubles consequent on kidney mischief, which will be found most effectual, will be the removal of the accumulation of the products of histolysis, since treatment of the kidney itself is impossible.

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[1] Bamberger has also brought forward this argument against Traube's theory. Flint also rejects it.

For the achievement of this we possess two totally different means—either action on the kidney, such of it as remains useful, or the bringing of other organs into increased action; usually both combined will be found most effectual. Thus, an active purgative, by exciting the bowels, will aid in the elimination of the offending material;[1] diaphoresis is an excellent form of wielding this power of other organs to aid in the elimination of material somewhat special to another organ.[2] The most persistent form which the products of retrograde tissue metamorphosis assume is that of uric acid; and experience has told me that potash and buchu, with colchicum, better relieve palpitation and the other evidences of heart disturbance, in Bright's disease, than did digitalis, belladonna, etc., without this truly specific treatment. The retained uric acid, which can only exist in the alkaline blood, in union with some base, unites with the potash, and in this highly soluble condition passes readily out through the kidneys by dialysis. The action of colchicum and buchu is to increase the elimination of the urine salts by acting on the renal secreting cells, and the consequence of this treatment is a decided increase in the specific gravity of the urine, not attained by diminution of its bulk. This treatment of the heart trouble, consequent on renal impairment, by removing the excess of waste material in the blood, is a most important point in the checking, and, to some degree, arresting the morbid processes already instituted. There is no doubt that the constant presence of uric acid in the blood still further aggravates the kidney mischief already existing. The question of the retention of urea in the blood in acute congestion of the kidney and uræmia, does not bear on the subject under discussion here.

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[1] See article "Secretion," by Carpenter, in Todd's Cyclopædia of Anat. and Physiology, for the explanation of the power of one excretory organ to aid another.

[2] Dickenson on Albuminuria, p. 98.

No treatment, however, should be persisted in until anæmia be produced. Defective nutrition is one of the great primary sources of heart failure, and as a secondary factor it very commonly hastens the setting in of loss of that compensatory hypertrophy, which has hitherto ameliorated the mischief done. The tendency of Bright's disease is towards imperfect nutrition, and when this is threatening the treatment must be accompanied, or followed, by the administration of iron. For this purpose the potassio-tartrate is eminently suited, and goes well with the bicarbonate of potash. The effect of blood-poisons of all kinds is decidedly to check blood-formation, as for instance, Bright's disease, syphilis, malarial poisons, lead, etc., and their elimination by their respective specifics, potash, mercury, quinine, iodide of potassium, etc., is the first step to be attended to in the treatment of the affections to which they give rise. In all these conditions the addition of iron, to aid in the formation of new blood, is of great service. In cases of heart failure all conditions of anæmia should be carefully examined and submitted to the treatment adapted to each. Thus, leucorrhœa and menorrhagia frequently cause the anæmia which leads to imperfect nutrition and consequent heart failure. (These affections are, however, not uncommonly the consequence as well as the cause of heart impairment. They are frequently the consequence of the general venous congestion which results from cardiac debility; and these should be met as much by improvement in the heart itself as by measures intended for their special relief.—*Von Dusch's Lehrbuch von Hertzkrankheiten*, 1868, p. 195.)

Dyspepsia, hæmorrhoids, and other debilitating causational conditions must be removed as far as practicable. Imperfect nutrition leads to loss of propulsive power, the ventricle is not sufficiently emptied at each systole, a certain amount of blood remains in the chamber, the blood is poured from the charged vessels into a ventricle already partially filled, and dilatation results. There is a loss of balance betwixt the blood to be driven and the power to drive it. Flint (Diseases of the Heart, 1870) says, "The combination of anæmia and enlargemeut of the heart is to be prevented, if possible; and, if it exist, the anæmia, if possible, is to be removed by appropriate measures of medication, diet, and regimen. Irrespective of this condition of the blood, all agencies which tend to weaken unduly the force of the ventricular contractions are contraindicated. In proportion to the weakness of the heart will be the tendency to dilatation rather than to hypertrophy. So long as hypertrophy predominates, the patient is comparatively safe" (p. 77). What gives this direct expression even more force is, that here he is speaking of the treatment of hypertrophy. When dilatation is manifesting itself it becomes doubly important to avoid any tendency to anæmia. And where this tendency does not yield to treatment, but manifests an inclination to persist, the patient should be remorselessly confined to bed for a time, to reduce to a minimum the calls on the nutritive processes.

Pretty much the same effect upon the heart as is produced by anæmia, is produced by nervous exhaustion, only here the action is more special upon the heart. The effect of nervous exhaustion is largely located in the organic nervous system, and the viscera supplied from it. The effect of this nervous exhaustion is to impair the sensitiveness of the cardiac ganglia, upon which depends cardiac contraction. The sensation of distension of the muscular fibres is recorded by the cardiac ganglia, and contraction follows, as in all hollow or spherical masses of muscular fibre. When, then, from impairment of sensibility a condition of over-distension results, there follows imperfect power of contraction, and thus dilatation is inaugurated. This imperfect contraction is thus productive of dilatation and other consequent troubles. The ventricle not thoroughly emptied is already, on diastole, partially full, it is soon full to over-distension from the pouring in of blood from the gorged auricle and veins behind : imperfectly emptied, it is soon over-full, and frequent imperfect contractions take the place of normal contractions. This condition not only tends to perpetuate itself, but sooner or later to lead to degeneration of tissue. A small bulk of blood only is thrown at each ventricular systole into the aorta; it is imperfectly distended, and consequently its recoil is diminished; this aortic recoil is the propelling power for the coronary arteries; the lessened flow diminishes the nutrition of the heart-walls, and consequently degeneration results. At the same time, too, every additional contraction in the minute diminishes the heart's period of rest. All causes, then, which increase the rapidity of the pulse, and especially when this increase in frequency is accompanied by loss of power in each pulsation, should be avoided, as excitement, anxiety in speculation, excessive drinking, the denial of sleep, especially in the horizontal posture, tobacco-smoking, and, certainly not to be omitted, the excessive use of tea. The effect of agents which lead to nervous exhaustion and increased frequency of heart contraction, with loss of quality, is strictly analogous in effect to imperfect nutrition or anæmia. The complete or partial removal, where complete removal is not feasible, of these causes is imperatively demanded in the treatment of the heart failure which results from them.

Pericarditis leads to changes in the heart itself either by the presence of fluid compressing the heart, or by adhesion of the pericardium along the track of the coronary vessels, and imperfect nutrition of the heart from impeded blood-supply. This is by no means uncommon (Rokitansky). The adhesion does not admit of alleviation, but it is a strong argument in favour of taking every care to prevent or arrest pericarditis in its acute stage. The effused fluid may be reduced by absorbents, blisters, and, when necessary, by paracentesis.

Endocarditis when acute is usually associated with acute rheumatism, and is therefore most effectually treated by the measures which are found most potent in rheumatism. . But chronic endocarditis is, like atheroma, an affection of another character, though it may be the continuation of the acute process. It is mischievous in many different ways. It may deform or contort the valves; it may occasion obstructive disease or insufficiency, or both combined; it may proceed, from an atheromatous patch on the heart-wall, to ulceration, and the formation of a true ventricular aneurism; or it may be located in the aorta and large vessels chiefly, and lead either directly to alterations in the heart-walls, or indirectly by the establishment of aneurism. Its causation, then, is of great importance, and endarteritis deformans will ensue whenever the brittle endocardium is exposed to strain or extra distension. Thus, it is associated with the first section of this paper, excessive muscular exertion or strain. So it is very commonly associated with the chronic form of kidney mischief. Betwixt the hypertrophied muscular coat of the arterioles and the hypertrophied heart the intermediate vessels must be subjected to increased distension; that we have increased arterial tension is evidenced by the increased bulk of urine, showing the increased pressure on the glomeruli of the kidney, one of the most invariable symptoms of granular kidney. This constant increased tension in itself leads to the production of connective tissue in excess, while, at the same time, the endocardium is constantly in contact with impure blood, and it is possible, though not demonstrable, that it receives its nutrition partly by imbibition as well as from the vasa vasorum. Whether this last be so or not, the endocardium is exposed to excessive distension, and is fed with blood altered in its properties, in these conditions of chronic kidney disease, and so we cannot feel surprised at its becoming itself altered and diseased. Not only are atheromatous patches found, but a more or less general condition of atheromatous degeneration is usually present. The association of these morbid processes is too constant to admit of our explaining it on the ground of accidental coincidence; if not standing to each other in a causational relationship, they are, at least, the sequelæ of some morbid condition, common to each as a provoking cause. This condition has purposely been removed from the section of the relation of alterations in the left ventricle and disease in the kidney, and placed under endocarditis, as being the result of a blood-poison on the endarterium or endocardium. The question of the chronic disease of the large vessels and lining membrane of the heart does not admit of being fully answered yet. In considering the "atheromatous process," Oppolzer gives the causes, as classed by various writers, as gout, rheumatism, carcinoma, abuse of alcohol, syphilis, etc.; and the question of connexion is not answered in the negative by our inability to explain the mode of operation. Apparently, however, uric acid seems to have a decided tendency to produce the development of connective tissue in excess by its irritant action, and in effect is closely allied to alcohol as a tissue irritant. The avoidance of these two agents is very important in heart failure associated with atheroma. Not that alcohol should therefore be absolutely forbidden in this condition, but such an amount only should be allowed as may fairly be supposed to be consumed, and no excess left to be eliminated as alcohol, and further irritate the kidneys. These various causes, above enumerated, of atheroma affect too the substance of the heart itself, as cancer, tubercle, syphilis, etc. This last alone can be regarded as amenable to treatment, and even that is questionable. Still, when, as Lancereaux has shown, heart failure comes on with or after the usual manifestations of syphilis (constitutional), a presumption exists in favour of the presence of gummata within its substance; and this too is rendered more probable if occurring in a comparatively young person, and especially if there be no sign of valvular mischief. Here antisyphilitic treatment may tend to arrest the further development of the gummata, but, as Von Dusch justly remarks, it is impossible to amend the masses of connective tissue which remain, or to convert them into muscular fibre.

This review of the causes which lead to heart failure will demonstrate, to some extent at least, the necessity for including the avoidance of causation, either primarily or secondarily, as an aggravation to the already existing mischief in the treatment of heart affections. The means by which we may act directly upon the heart itself next claim consideration; and afterwards the rational treatment of the sequelæ, whether the case admits of hope, or merely admits of diminution of the suffering entailed. It is not possible to add much to the means already at our command for this last purpose, but by consideration of their action, and the varying results to be looked for, according to the special morbid condition of the heart, it may be possible to so arrange the subject as to be practically useful.

Means of acting on the Heart itself.

The means by which we may act upon the heart itself are necessarily of three kinds—those acting on it from without, *i.e.*, affecting it regionally; those acting on it from within, the reduction of the bulk of blood circulating in it; and those which act upon its muscular walls directly. The action on the heart by pressure around it is only too obvious. This is most especially seen in the accumulation of fluid in the pericardium. But equally and much more commonly visible is the effect of pressure upon the abdominal surface of the diaphragm, and its bulging into the thorax, thus diminishing the space within which the heart moves in its action. The heart varies in bulk in systole and diastole, betwixt full distension and the chambers when emptied. It is obvious, then, that while the bony parietes of the thorax remain *in statu quo*, and the diaphragm is pushed upwards in the neighbourhood of the heart, the heart itself must be affected by that pressure. That it is so is a fact well known in clinical experience, even in healthy hearts, as in accumulations of gas, solids, etc., in the stomach and colon: how much more they affect a heart already impaired is equally well known. The sense of discomfort, shortness of breath, and palpitation, which are found very unpleasant in a sound person, is intensified in a person with a diseased heart: and this more especially when the right ventricle is involved. The accumulation within the colon or stomach of gas must be met by carminatives, stimulants, diffusible or other; and in favour of ammonia has been urged a chemical argument. It has been asserted that a reduction of the bulk of gas takes place by its union with the free ammonia, converting it into a carbonate; whether this is so or not, it is certainly a useful stimulant in this condition. When the accumulation is solid, purgatives, and in acute dyspepsia emetics, are useful—ipecacuanha or sulphate of zinc, or both combined. Turpentine stupes are, too, desirable. In connexion with this subject is involved that of the relief afforded by retaining the sitting posture, or being propped up in bed, in heart disease, and especially in the acute paroxysms of dyspnœa. There is no question as to the fact. The explanation is not so simply answered; but, after deliberate thought, it appears most probable that the relief is not in the respiratory passages being so brought or kept in a straight line, as has been asserted, as when the patient seeks relief by sitting on one chair, and resting his arms on the back of another (here the fixing of the arms enables the auxiliary muscles of respiration to act more efficiently), or desires to be propped up in bed, or dies sitting in a chair. At other times, when seized with an acute paroxysm, the reclining patient jumps up in bed, gets on his or her hands and knees, retaining this posture for hours, uncomfortable though it is at other times. It lies in the regional relations of the diaphragm. When in the reclining posture, the contents of the abdomen do not fall from the diaphragm by their own gravity, but press equally on the diaphragm as on the other parietes; and this, too, markedly when any load or pressure exists in the stomach or colon. This is at once relieved by elevating the upper portion of the body, or in the attitude on hands and knees. Whether this is all the explanation or not, there can be no question that it is part of it. All pressure from without upon the heart impedes its action, and on its removal the heart is relieved.

The question of action upon the heart from within, by reduction of the bulk of blood in the venous centres, and especially during distension of the right ventricle, has been discussed and even debated only some few years ago. Most members of the profession will remember the memorable discussion on bleeding betwixt Dr

Markham and Sir Thomas Watson on "The Change of Type in Disease," and will also be more or less familiar with the more recent elaborate paper "On Bloodletting" by B. W. Richardson, F.R.S. The question briefly is the relief of over-distension of the right heart by the withdrawal of blood from the circulation. In cardiac asthma the right ventricle is in over-distension, and at the point of paralysis therefrom, in its inability to drive the blood through the capillaries of the lungs. This condition is unfortunately very frequent in the course of chronic heart disease, and may arise from diaphragmatic pressure, when in the horizontal position, or from spasm of the pulmonary arterioles, etc. Here, again, the question of the relief afforded by the withdrawal of blood generally or locally is not one about the fact: that is unquestionable enough; but whether the immediate danger would justify resort to the measure in the face of the danger looming of oncoming anæmia. A few ounces of blood are not much to a healthy person, but amount to a great deal in a person with advanced heart disease. Consequently, the tendency of practice is to draw blood away from the venous centres by means which do not necessitate its removal from the system. Thus, one method much resorted to is the diminution of the bulk of blood by the administration of purgatives. Another and more speedy plan is the dilating of the innumerable capillaries of the skin by the application of heat, of irritating materials, or both combined. The application of mustard poultices and blisters are measures of no recent adoption; but the advance of knowledge has demonstrated that the effect desired can be more quickly and surely attained by the application of hot poultices around the trunk, or as far as is practicable. They at once dilate the capillaries of the skin, and thus furnish relief to the gorged venous centres: thus acting in a manner precisely similar to the withdrawal of blood by bleeding. Mustard may or may not be added to aid their efficiency by its irritant action, or by its action as a general stimulant. The use, then, of this method of unloading the venous centres is in practice preferable to that of withdrawing blood from the organism for ever, as is unquestionably the case with general or local depletory measures, and is thus to be resorted to first; but the question of resorting to further measures when these, combined with the administration of internal remedies, fail, is whether the emergency is sufficiently great or not. Several times has the writer stood, lancet in hand, some time, carefully watching the action of the other measures, and, on their success, returned the lancet unused. Though the relief of this condition by venesection must be seen to be appreciated, still the immediate advantages must be weighed against the loss of that blood permanently. No doubt, in practice, local bleeding by leeches is largely resorted to, and so, but for the natural objection to the cutting of the skin, would be wet-cupping; dry-cupping is not so useful here as the covering a larger surface with hot poultices, however useful it may be when applied to a localized surface to divert to the skin the blood of an artery whose internal distribution supplies an internal organ affected, as over the loins in kidney congestion, or in costal pleurisy, etc. In addition to these measures of acting on the heart from outside and within it, is the question of acting on the heart itself by means of remedies. Can we increase and diminish the completeness and power of the ventricular contractions? is a question which can now be answered in the affirmative. There do exist agents which positively stimulate the heart-walls into increased contraction. Thus the condition of the heart-walls, as regards distension, is brought within the reach of remedial agents administered internally. The effect of such an agent in the condition described immediately above, is to cause the ventricle to contract more perfectly; and thus it is not only relieved from the danger of paralysis from over-distension, but aided to recover itself. No sedative to the heart is needed here betwixt its distension and the risk of paralysis from the carbonic acid of the highly venous blood within it; it is only already too powerless; but some agent which will enable it to contract more efficiently. That we are in possession of such agents is certain. The chief one in use is digitalis. The names of Sanders, Orfila, Traube, Dybkowsky and Pellikan, Handfield Jones, Hilton Fagge and Stevenson, Reich, Niemeyer, Winogradoff, are intimately associated with this subject; and though the earliest impression of its action was that it was a sedative, because under it the heart grew quieter, still, from the work of Withering,[1] in 1785, down to the most recent investigation by the writer,[2] the idea has gained ground that this quieting of the heart's action arose from its being endowed with more power. Allied to it are other agents, as the scilla maritima, associated with the names of Fagge and Stevenson; the dajasek, or arrow-poison of Borneo (Braidwood), unquestionably belladonna, associated with the names of Meuriot, the writer, and notably Dr John Harley; the alkaloid of veratrum, advocated by Trousseau, Aran, Vocher, and Horatio Wood; caffeine, Jacquoud, the writer; and probably scoparium; others of the scrophulariaceæ,[3] and possibly some of the ordeal poisons of the tropics. Physiological experiment demonstrates what clinical observation had long expected, that the effect of digitalis is to produce more perfect action of the ventricles. The condition of complete paralysis by aconite, identical with that of the over-distended heart, was quickly relieved by the administration of digitalis; and not only so, but that previously paralyzed heart, in extreme distension, can be brought to a standstill in the opposite condition of complete contraction, if enough of digitalis be administered. In practice, then, digitalis can be administered with excellent effect in this condition of over-distension of the right ventricle, and has been so used. In all conditions where the muscular walls of the heart are unequal to the demand on them, whether from valvular disease or other cause, digitalis can be given, not only for a time, but continuously and uninterruptedly for years, with excellent effect. The continuous and persistent administration of digitalis in cardiac inability not only secures the immediate effects of improved ventricular contraction, but has an ulterior effect upon the heart itself; and oftentimes the heart, getting further and further distended and enfeebled, sending less and less blood into the aorta at every systole, and thus eliciting less aortic distension and consequent recoil, and with that diminished recoil an impaired coronary circulation and supply of blood to itself, thus ensuring more complete muscular failure, is, by digitalis, enabled to contract more perfectly, to elicit better aortic distension and recoil, better supply of blood to itself, and improved nutrition; while every contraction fewer in the minute is adding to its period of rest. Thus, not only can a downward progress be arrested, but even a career of improvement inaugurated, which in simple dilatation or distension may result in perfect restoration to health. Where this cannot be accomplished, not only may life be made more bearable, but even be prolonged; and the question of the importance of prolonged life in individuals is one the importance of which has been pointed out by Quetelet (Sur l'Homme); while that importance itself is materially enhanced by combining with it a power for more or less labour, corporeal or mental; and that that is within the clear limits of possibilities is no therapeutic fiction, whatever doubts may be cast by some on the possibility of perfect restoration to health. Even in the worst cases patients cling to existence, and something may be done to relieve the suffering which results from heart failure by thus acting on the muscular walls by digitalis.

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[1] On Foxglove. Birmingham, 1785. Leipzig, 1786.

[2] The Hastings Prize Essay, 1870. "Digitalis: its Mode of Action, and its Use." H. K. Lewis, 1871.

[3] Some Experiments by Dr H. Barnes of Carlisle, and Dr J. Wallace of Dalston, now of Liverpool, on other members of the Scrophulariaceæ, may some day see light.

Along with this direct treatment of the heart itself may, and often must, be combined diminished call for exertion on its part; rest is imperative for a time, or more or less permanently, and the improvement in the coronary circulation must be supplemented by improvement in the blood itself. Iron, cod-liver oil, arsenic, and the other means of improving blood-formation, and from it again improved nutrition, are aided by the vegetable tonics strychnine, quinine, etc., which improve the digestive powers of the stomach. As to iron, Fuller says that the continuous administration of iron for three or four years has resulted in the removal of every physical sign and rational symptom of dilatation. Thus the heart itself has a power of recovery when furnished merely with an improved blood-supply without the aid of means acting directly upon itself. In practice, the combination of different measures may be indicated or demanded, and some of the formulæ most used by the writer were these—

1. ℞ Pot. bicarb. gr. v. or x.
Ferri pot. tart. gr. v.
Tinct. digital. ♏ x.
Inf. calumb. ℥1, ter in die.

2. ℞ Tinct. digital. ♏ x.
Sp. chloroformi, ♏ xxv.
Inf. buchu, ℥1, ter in die.

3. ℞ Tinct. digital. ♏ x.
Liq. strychnia, ♏ v.
Tinct. fer. mur. ♏ v. or x.
Aquæ or inf. quass. ℥1, ter in die.

4. ℞ Tinct. digital. ♏ x.
Sp. æth. nit. ♏ xxv.
Tinct. sem. colch. ♏ x.
Inf. buchu, ℥1, ter in die.

5. ℞ Pulv. digital. gr. ½.
Pulv. ferri sulph. exsic. gr. ¼.
Pulv. pip. nig. gr. 1.
Ext. gent. or pil. al. et myrrh,
q. s. 1. bis in die.

6. ℞ Tinct. belladonnæ, ♏ xx.
Tinct. nucis vomicæ, ♏ x.
Mist. camphoræ, ℥1, ter in die.

These different formulæ may each be useful, and the second is especially agreeable in simple cardiac debility: the first is better when washed down with a tumblerful of water, and with the pills a patient may go away on a visit very comfortably. Thus by digitalis we can, more or less, according to the nature of the case and the integrity of the heart-walls, act upon a heart whose contractions are becoming incomplete. This is the centre point of action upon the heart directly; for we must all be only too painfully aware that any action on diseased valves is beyond the reach of remedies, in this age as yet. But whether the origin be valvular failure or other cause, as long as the heart can contract completely a better state of matters is maintained than when the heart-walls fail. It is this failure of power, this inability to contract completely on the part of the ventricles, which is the thing we have to dread as being the end, or at any rate the beginning of the end, of the case. It may not be out of place here to add that in electricity we possess a power that may be of great service in the treatment of heart failure. The effect of a feeble electric current is to increase the force and lessen the frequency of the heart's action: as the writer has observed with a small Stohrer's battery, one pole placed over the heart and the other to the nape of the neck.

Schiff, Rosenthal, and others have found this application to the vagus to increase the force and frequency of the heart's action.

In some cases of palpitation, both in organic disease and mere disturbance of the heart, the administration of morphia by the subcutaneous injection, so fashionable now, has been practised, and not without success. But the cases ought to be clearly distinguished. We have no evidence yet that morphia aids the heart to contract, but we have reason to suppose that it relaxes spasm. It is, then, in these cases where spasm of the arterioles is necessitating greater exertion in the heart-walls, in consequence of the impeded flow, and where palpitation is the evidence of that laboriousness, of that more or less inability of the heart to force forward the blood-column, that morphia does good. That this condition may be relieved by morphia seems intelligible enough, but is even better met by the sixth formula. Even when the palpitation occurs in structurally diseased hearts in consequence of spasm of the arterioles, this plan may be successful; but in the exacerbations of blood-poisoning in kidney disease it is contraindicated by the intolerance of opium, equally with mercury, which is exhibited by those suffering from chronic Bright's disease. In a case where morphia was badly borne, B. W. Richardson placed a mustard blister on the neck "so as indirectly to influence the sympathetics," and the relief afforded was immediate. (*Discourses on Practical Physic*, p. 93,—1871.)

Rational Treatment of Sequelæ.

The third and last division of the treatment of heart affections is only of less importance than the preceding divisions, because it does not so much prevent as alleviate evils. Still, when from inability in the centre of the circulation we have decidedly venous congestion, and, from it, again, a sort of re-balancing of the systems arterial and venous, we have the different viscera in a state of asthenic congestion: a condition unfavourable to the performances of function. Thus, we have gastric catarrh, congestion of the liver, diminished flow of urine, and tendency to disease of the kidney, as the consequence and not the cause of heart disease, in females uterine discharges menorrhagic or leucorrhœal; so we have effusion through the lining membrane of the air-passages, and a flow of fluid, chronic bronchitis or bronchorrhœa, œdema of the lungs, etc. etc., and finally general anasarca. Now, it is obvious that where we hope not only to relieve matters, but to inaugurate improvement, we must relieve the viscera from a condition unfavourable to improved nutrition. For this purpose we can use purgatives, diuretics, diaphoretics, and even expectorants: all agents affecting the secretory and excretory power of the different organs.

Purgatives, and more especially drastic cathartics, have been long resorted to with the intention of calling out the action of the bowel; and the different effect of two drachms of pulv. jalap. co., with a grain of gamboge in it, on a patient with advanced heart disease, to its effect on a healthy person, speaks volumes. The latter would feel decidedly depressed, but the sufferer from heart disease feels enlivened, sprightly, and altogether improved. Four or five copious watery evacuations have relieved his venous congestion, relieved his distended right ventricle, and improved his pulse, while the relief to the cerebral congestion manifests itself in his improved spirits. This method of acting on the viscera in the congestion of heart failure is deservedly a favourite one; and for the purpose of exciting free catharsis the usual means are pulv. jalap. co., pulv. scam. co., elaterium, and gamboge. Gamboge rubbed up with bitartrate of potash and black pepper, or other carminative, is a capital cathartic. All may have to be used in turn, as one form soon loses its efficacy. Chronic diarrhœa is not in this condition to be arrested, except by action on the skin, unless it is clearly threatening the patient's existence: it is a natural drain, as much as eczema in hydrops. Purgatives are often thought to have a diuretic effect in heart affections; this is the impression of experience as a fact. Really, the improvement in the circulation is followed by freer circulation through the kidneys and better arterial tension, and consequently there is better diuresis of water.

Diuretics have not only always been resorted to in the treatment of dropsy, which was, until recently, regarded as a disease *per se* and not a sequel, but the improved or unaltered flow of urine has been adopted as a sort of test of the efficacy of the remedial measures resorted to. Long before the experiments of Paff, Winogradoff, Handfield Jones, and Brunton, on arterial tension, popular observation had learnt that an increased flow of urine indicated an improvement in the patient's immediate condition in dropsy; and it is, therefore, in the agents classed as diuretics that we find digitalis, squill, belladonna, etc., which we now know exercise their diuretic action by virtue of the increased arterial tension, the result of more perfect ventricular contraction. The water excretion by the kidneys is a question of hydraulics—a purely mechanical result of the pressure of the blood on the thin-walled glomeruli of the Malpighian bodies. When the arterial blood is driven in but feebly, and the venous is almost stagnant, we find the bulk of urine very low indeed: but its sp. gr. may be very high, for the bulk of urine and the elimination of solid excreta by the renal secreting cells bear no necessary relation to each other. No doubt, too, certain other agents act as diuretics, as juniper, turpentine, potash nitrate, nitric æther, etc., by their being direct stimulants to the kidneys, and thus inducing an increased flow of blood to these organs. But it is in the first division we find our agents which are the best diuretics in heart failure, and what position scoparium should hold it is difficult to say from want of observation and experiments, but it will probably be found among the first named. The other class of diuretics, as colchicum, cantharadine, and buchu, etc., which increase the amount of solids without affecting the bulk of urine, are not to be regarded as diuretics in the treatment of heart failure.[1] Stimulants are diuretics insomuch as they increase the completeness of the ventricular contractions and improve arterial tension.

Diaphoretics are not yet sufficiently adopted as a means of affording relief in dropsy and the sequelæ of heart failure; but it is not only a very effectual, but, in my experience so far, a perfectly safe way of increasing water elimination, especially when the heart failure is accompanied by renal disease. The sitz-bath is a good form, or any bath which permits the patient to breathe freely: Turkish baths are regarded as not very safe. Another plan, employed by the late Sir James Simpson, has been so useful that it cannot be omitted, and that is, to fill six or eight lemonade bottles with boiling water, cork them well, and draw over each a woollen stocking wrung out of hot water, then pack them round the patient in bed, who in fifteen minutes or so commences to sweat profusely: they can be continued for an hour, or repeated when necessary. This plan can be resorted to with the poorest patients, and when a patient of any class is confined to bed. In obstinate cases, where the skin will not be induced to relax by hot baths, cold packing has been resorted to in order to paralyze the minute vessels of the skin, and thus produce dilatation of them in cases of chronic kidney disease; but I am not acquainted with the details as to whether cases with distinct heart failure were so treated or not.

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[1] The Americans seem better acquainted than we are with the difference betwixt water diuretics and solid diuretics; and this is due to the adoption of the conclusions of Hammond in his essay "On the Action of Certain Vegetable Diuretics, 1859."

Dropsy is not only a great cause of suffering to a patient with heart disease, but is regarded by non-professional people as indicating great danger to existence. It is, no doubt, a sign of failing power of serious import; still its occurrence often gives temporary relief. When the distended venous system is relieved by a sudden general œdema, great and immediate relief is experienced, and that may be utilized to improve matters and to induce re-absorption. But usually dropsy commences insidiously, retreats for a longer or shorter time under proper treatment, but usually it is not long in returning, and is more persistent on each reappearance. If, during the interval, the patient has been under good treatment, and yet in spite of it it returns, it is a prognostic sign of the very worst import: no worse sign can exist, and its reappearance calls for the most energetic treatment. Sometimes œdema is very capricious in its seat, and flits about in a curious to-and-fro manner; in one well-remembered case, where the lesion was tricuspid, the oscillations from legs to lungs and back again were very marked. If the patient was found with a less agonized countenance, his legs were tremendously swollen; when he was gasping for breath, his legs were fallen. Dropsy, as a sequel to heart disease, is amenable, more or less, to the measures cited above, in addition to which is the question of puncture. Nature oftentimes establishes a drain of her own; not always with good effect. Puncture, or incision, is, in my personal experience, in most cases worse than useless, and only adds a wet bed to the patient's sufferings. One case only can I recall where the benefit was decided and unequivocal. Others have had a less unpleasant experience, but it is in dropsy from heart and kidney disease combined that the benefit of puncture or incision is chiefly seen. In simple heart failure it is a hazardous proceeding, and sometimes the carbonic-acid poisoning, the irregularity of pulse, dyspnœa, etc., commence to increase on the establishment of the drain. In one case this occurred when the serum spirted out of the needle-holes in an arterial jet, and the bed was soon in a perfect puddle, and could not be kept otherwise during the six-and-thirty hours the patient survived. Still the puncture, or incision, is among our armamentaria, and does frequently afford more or less relief; but the incisions may become troublesome sores, or even slough.

Another troublesome sequel of heart failure is increased flow of bronchial mucus or serum, a chronic bronchitis or bronchorrhœa.[1] This is not only a result of imperfect nutrition to the respiratory structures and consequent formation of many imperfect epithelium cells or muous, but is also a consequence of pulmonic congestion, and as such gives more or less relief to the distended vessels. It is thus often useful though troublesome, for it disturbs the patient's rest and impedes his respiration. Where this condition is marked, a mixture of digitalis, or belladonna with senega or squill and æther may be prescribed; the two forms given here are useful, one very palatable and the other very effective.

℞ Tinct. belladonnæ, ♏xv.
Sp. chloroform, ♏xxv.
Ac. mur. dil. ♏x.
Syr. scillæ, ʒ1.
Aquæ ad ℥1, ter in die.

℞ Tinct. digital. ♏x.
Ammon. carb. gr. v.
Inf. senegæ, ℥1, ter in die.

One caution must be observed in the paroxysms of chronic bronchitis in heart failure as regards prognosis. Again and again will such a patient alarm all around him, and even induce his physician to regard dissolution as impending, and in the morning—for it is usually in the evening or early night they come on—fall into a doze, wake up relieved, and go on fairly for some time after. This is, though a fortunate termination, sometimes unfortunate for the physician, in this way:—The alarmed friends sit up all night, and next day—the alarm having passed away—are apt to regard the physician who, however naturally, led them into error, as wanting in knowledge of his profession. This acute pulmonic congestion, with free flow of serum, must not then be regarded as an accession of acute bronchitis, which would, in all human probability, be fatal, but be described as a period of suffering and peril, from which it is not impossible the patient may emerge. So also may this condition of pulmonic congestion lead to rupture of the vessels and hæmoptysis. This is often very alarming; but this hæmoptysis is not itself injurious, except by the loss of blood; and probably in so severe congestion the loss of blood is necessary, and could not be so cheaply or effectually furnished in any other manner. Blood is blood, and whether it is lost by bleeding, leeches, or hæmoptysis, it is the same. Hæmoptysis is the most direct form of unloading the overcharged vessels, and is not specially injurious, though of course it may go on to a fatal termination, especially when fed by stimulants.

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[1] Rindfleisch, "Lehrbuch der Pathologischen Gewebelehre," 1869, § 461. Bronchialkatarrh. Krankheiten der Lunge in Folge von Anomalien des Herzens, "bei meisten Individuen welchen an Insufficienz und Stenose der Mitralklappen leiden, in einer Andauernden statischen Hyperämie der Bronchialschleimhaut eine starke Disposition zu katarrhalisher Entzündung gegeben ist."

But ordinarily considered, hæmoptysis in heart disease is not itself a disease or dangerous, but it is a symptom of a very serious condition; and it is that condition on which it depends, and not the hæmoptysis itself, which should excite our fears. It is better, too, not to attempt to arrest the flow here by sulphuric acid, opium, and acetate of lead, etc., which certainly disturb the stomach, but to keep the patient perfectly quiet. Should the friends be very much alarmed, it may be desirable to resort to general bleeding.

So, too, when the powers are failing, and the patient, utterly worn out, is sleepy to a degree, dozing off for a moment, and then waking up with a start in terror, and gasping for breath—even in this piteous condition to administer soporifics is a moral crime. If the patient sleeps, it is that sleep which knows no wakening, except in another state of being. The late Hyde Salter pointed this out strongly. "Take away," he says, "the necessity for the voluntary effort indispensable to respiration, and the patient would soon be so sound asleep it would be difficult to wake him. Suspend the voluntary efforts by an opiate, and the sleep is the sleep of death." However much we may pity the sufferer, we cannot feel justified in prescribing opium or other narcotic for a condition which is not sleeplessness, but where voluntary effort, incompatible with sleep, is necessary to existence. Nor is chloral hydrate any safer here than the vegetable soporifics. A friend, whom I will not name, one day ordered chloral to a patient in this condition, and on being asked if it was effective, said—"Highly so! the patient never wakened, and has been buried three weeks."

The question of stimulants in the treatment of heart disease and its sequelæ is a difficult one. Where they are habitually taken, it may neither be desirable nor easy to withdraw them; but where they, *i.e.*, alcoholic stimulants, evidently increase the rapidity and impair the quality of the ventricular contractions, some attempt must be made to diminish, at least, the amount. Where a dose of alcohol improves the pulse and enables the patient to eat and digest better, its use is indicated. In the most advanced stages, alcohol is simply indispensable, and forms the chief portion of what the patient takes. In the less advanced stages, it is often desirable that the patient take spirit and water before getting into bed; it warms him in the cold bed, and helps him off into refreshing sleep with less evil effect than any other agent. The cold of the bed often has a disturbing effect on these patients. The blood in the skin, chilled by contact with the cold clothes, excites spasm of the pulmonary arterioles by its temperature, and thus taxes the right heart. The bed should be previously warmed.

External measures are, to some extent, useful—as a belladonna plaster over the region of the heart, for instance, which is a favourite measure with many. It is, to some extent, physically useful; but psychically it often acts charmingly, and so may often be recommended with advantage. As to blisters over the region of the heart to allay irritability, no modern-educated person would think of resorting to them; as good or better effects having been produced in the hands of those who do not resort to them as with those who do, the effect of them may be regarded as adding a troublesome sore to the patient's troubles, and so diverting their attention.

The general treatment, in the more advanced cases, consists of food nutritious and easily assimilable, in small quantities, and often. Very little or no supper is desirable; and patients soon find out that they must make their choice betwixt suppers and dyspnœa, or the absence of both—the relation between the two is unequivocal.[1] The morning is the time during which the bulk of the food must be taken. The clothing must be warm, for the tendency to lowering of temperature is marked. Exercise must be limited, and exertion forbidden. The bowels must be regulated, and no straining at stool must be permitted. Death on the night-chair is not at all uncommon in heart disease. The venous congestion leads to gastric catarrh, with its pathognomonic symptom of sense of fulness constantly, and to constipation, and attention must always be directed to the condition of the intestinal canal. The bladder must be examined occasionally, and if involuntary dribbling exists a catheter must be used; for, as Sir Henry Thompson insists, involuntary micturition is the evidence of a distended bladder and not of an empty one. This attention to the bladder is more necessary, as prostatic enlargement is common in elderly men, who are also often the subject of heart disease. But there is another reason, and that is, that, in consequence of the venous congestion of the brain, the patient becomes altered in his cerebral manifestations, and not unfrequently his habits change somewhat. This effect of congestion of the cerebrum and its mental consequences are more frequent than is generally thought. The patient has a tendency to become petulant, whimsical, and childish, and must be treated with great considerateness. The appetite is often capricious, and must be humoured as far as is safe. The whole management of the sufferer from heart disease of an advanced type is especial, and consists of a union of judicious firmness, perfect openness, and infinite patience. The patient must be made as clearly aware of the nature of his case as is possible; and in those cases where the patient positively declines to know anything about himself, the friends should have the case explained to them, for his guidance, as to what he must do and what he must avoid, and why and wherefore. For, if the case is a prolonged one, everything to facilitate a good understanding and perfect mutual confidence must be cultivated; for this mutual confidence will many a time and oft be strained, partly by the oscillations of hope and despair in the patient, but more frequently from the interference of others.

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[1] There is no doubt that in the reclining posture the diaphragm is pressed on by the food in the stomach, and infringes on the space within which the heart moves.

Intercurrent disease of every kind, and especially bronchitis, which taxes the heart dreadfully, is attended with more than ordinary danger, and special attention must be paid to the heart, and measures taken to sustain it, or the patient will surely die. Finally, every case is a subtle problem to be solved; whether it is in that stage that recovery or repair is possible, or in that more advanced condition where treatment can only be regarded as a means of procuring more perfect euthanasia. When, however, the tricuspid becomes obviously affected, whether early on in the case or after a long period, the case passes quickly into the last category. Here no means of acting on the heart itself can do much, and that little only so long as the veins will or can sustain the pressure thus increased. Relief of the venous congestion, by acting on the various emunctories, is all that we can fairly hope for here; and whatever measures be adopted, it is not for long. Whatever hopes of prolonged life had previously existed must be given up, when the tricuspid lesion becomes marked; and from the last division of treatment alone can anything almost be expected.

ARTICLE III.—*On the Relative Weight of the Brain in the Sane and Insane.* By WILLIAM G. BALFOUR, L.R.C.S.E., Assistant Medical Officer, Montrose Royal Asylum.

IN the *Edinburgh Medical Journal* for April 1843 and September 1846, Drs Reid and Peacock published a series of observations on the weight of the brain in the sane; in 1854 Dr Skae, in an appendix to his annual report, gives tables showing the weight of the brain in 199 persons who died insane in the Edinburgh Asylum—98 of the weighings being of male and 101 being of female brains; but by far the most elaborate paper on the subject is that by Dr Thurnam, in the *Journal of Mental Science* for April 1866. Dr Thurnam has, in the paper written by him, collected all the information which up to that time had been published on the weight of the brain in the sane and insane. The following observations and tables are, by permission of Dr Howden, constructed from the weighings of the brain of 200 persons who died insane in the Montrose Asylum, and include, in some instances, the tables of Drs Reid, Peacock, Skae, and Thurnam.

Of the 200 brains weighed in the Montrose Asylum, 100 are men and 100 women. Many of them have been made under my own observation, and I believe them to be as far as possible accurate. In all of them the ventricles were opened, the cerebellum separated from the cerebrum, and the brain sliced previous to its being weighed, so that most of the serous effusion was allowed to drain away. The encephalon was first weighed, then the cerebellum, pons, and medulla, and the weight of the cerebrum calculated as the difference between them. The weights used are avoirdupois. When mention is made of the cerebellum, it is to be understood as including the pons varolii and medulla oblongata.

Different averages have been given by different observers as the weight of the sane brain—it having been variously stated as 47 oz. 8 dr., 49 oz., 49 oz. 14 dr., 50 oz. 3½ dr., for males; and 43 oz. 1 dr., 44 oz. 5 dr., 44 oz. 8½ dr., for females. In the last edition of Quain's "Anatomy" the average weight of the male encephalon is stated as being 50 oz. 3½ dr., and that of the female as 44 oz. 8½ dr. This is the average that is used in the following tables.

In Table I. the average weight of the sane encephalon is shown, and also the weight of the encephalon in the insane, as observed in the asylums at Somerset, Wilts, York, Edinburgh, and Montrose. The difference between the weight of the male and female brain in both classes is also stated.

TABLE I.—*Average Brain-Weights of Sane and Insane compared, and difference between Males and Females.*

	MALES.		FEMALES.		*Difference.*	
	oz.	dr.	oz.	dr.	oz.	dr.
Encephalon.—Sane, ...	50	3½	44	8½	5	11
„ Insane—Somerset, .	46	6	43	2	3	4
„ „ Wilts, . .	46	3	41	1	5	2
„ „ York, . .	48	7	43	1	5	6
„ „ Edinburgh,	50	2	44	0	6	2
„ „ Montrose, .	48	4	43	8	4	12

The averages given have been calculated from all ages, but necessarily contain but few weighings previous to the twentieth year, as the number of people who die in asylums before they have reached the twentieth year is small. From a subsequent table it will, however, be seen that the general averages are but little affected by the weights in the very young and the very old as far as the insane are concerned. On examining Table I. it will be noticed that the averages amongst the males from Somerset and Wilts Asylums approach one another very closely; those from York and Montrose Asylums are also almost the same; and those from Edinburgh are only 1 dr. less than the sane. The female averages are closest to one another, as follow:—The sane and those from the Edinburgh Asylum, the insane from Somerset and York Asylums, and the insane from Wilts and Montrose Asylums. The high average furnished by the males of the Edinburgh Asylum may possibly be accounted for by the fact that the general average has been calculated from the averages in the decennial periods instead of from the whole weighings; and when the table published by Dr Skae is examined, it will be seen that the average given for the decennial period between 70 and 80 is 57 oz. 8 dr., an average exceeding by 7 oz. the highest average in the other periods. It will also be noticed that only one brain was weighed by Dr Skae in the decennial period between 70 and 80 years. If this high average is excluded from Dr Skae's table, and that for the same period in the Montrose Asylum substituted, the general average for males who have died in the Edinburgh Asylum will be 48 oz. 11 dr., instead of 50 oz. 2 dr., and it will thus be nearly the same as the averages from York and Montrose Asylums. The smallness of the averages from Wilts and Somerset as contrasted with those from York, Edinburgh and Montrose Asylums, I am unable to account for, having no means of examining the data on which they are founded.

From Table I. the following conclusions are drawn :—

1st, That, as among the sane so amongst the insane, the brain of the male is heavier than that of the female.

2d, That the brains of the sane are, in both the sexes, heavier than the brains of the insane.

In Table II. the ratio that the female brain-weight bears to the male when taken as 100, is given for the sane and insane.

TABLE II.—*Ratio that the Female Brain-Weight has to the Male in the Sane and Insane.*

	FEMALES.	MALES.
Sane, ...	88	100
Insane—Somerset, . .	92	100
„ Wilts, . . .	88	100
„ York, . . .	88	100
„ Edinburgh, .	87	100
„ Montrose, . .	90	100

Average ratio from the insane female in all the asylums, as compared with the male—89·4 to 100.

In Table III. the ratio that the weights of insane brains have to sane, is given for both the sexes; 100 being taken to represent the sane in both sexes.

TABLE III.—*Ratio of the Brain-Weight of the Insane to the Sane in both Sexes.*

	MALES.		FEMALES.	
	Insane.	Sane.	Insane.	Sane.
Somerset, ...	92·1	100	96·8	100
Wilts, ...	91·97	100	92·2	100
York, ...	96·45	100	96·7	100
Edinburgh, ...	96·9	100	98·8	100
Montrose, ...	96·0	100	97·6	100
Averages of the Insane from all the Asylums,	94·6	100	96·3	100

The average weight of the male brain is reckoned as being 10 per cent. greater than that of the female amongst the sane, this difference being accounted for by the smaller stature of the female by some; by others the female is considered to be of less physical and intellectual powers than the male; the former reason appearing to have more truth than the latter. The same ratio is observed amongst the insane, and nearly in a like proportion.

Table III. shows that when the average weight of the brain of persons dying insane is compared with that of persons dying sane, there is a distinct diminution in that of the insane. This agrees with the observations of Dr Thurnam, but is opposed to a statement of Dr Skae's, who, from his observations, concludes that "the average weight of the encephalon is increased in persons dying insane."

It is possible that Dr Skae may have come to the above conclusion from his having calculated his general average in the manner previously stated, and also from his having started with a low average for the weight of the sane encephalon; for, when the corrections for these two errors are made, there is found to be only 1 per cent. of difference between the weights of the brains of the insane—whether dying in York, Edinburgh, or Montrose Asylums. Dr Thurnam, in trying to explain the anomaly of the increased weight of the insane male brains in the Edinburgh Asylum, considers that more of them are from a higher and better educated class than the insane in the other asylums.

In the next table the average weight of the male cerebrum and cerebellum in the sane and insane is given, along with the increase, in favour of the sane.

TABLE IV.—*Average Weight of the Cerebrum and Cerebellum in the Sane and Insane, with the difference between them.*

	MALES.		*Difference.*	
	Cerebrum. oz.	Cerebellum. oz.	Cerebrum. oz.	Cerebellum. oz.
Sane, ...	43·98	6·23		
Insane—Somerset, .	40·21	6·39	3·77	·16 of insane over sane.
„ Wilts, . .	39·55	6·75	4·43	·52 „
„ Edinburgh, .	42·50	6·18	1·48	·5 of sane over insane.
„ Montrose, .	42·1	6·15	1·88	·8 „
Average of all the Insane, . .	41·9	6·36	2·08	·13 of insane over sane.

Table IV. shows an increase in the weight of the sane cerebrum in the male sex over the insane of 2·08 oz., and an increase in the weight of the cerebellum of the insane over that of the sane of 13 oz., resulting in the greater weight it seems to have in the English weighings, as the Scotch show rather below the average.

Table V. shows the average weight of the cerebrum and cerebellum in the female, including both sane and insane, with the difference between them.

TABLE V.—*Average Weight of the Cerebrum and Cerebellum in the Sane and Insane, with the difference between the Sane and Insane.*

	FEMALES.		*Difference.*	
	Cerebrum. oz.	Cerebellum. oz.	Cerebrum. oz.	Cerebellum. oz.
Sane, ...	38·75	5·8		
Insane.—Edinburgh, .	38·31	5·33	·44	·47
„ Montrose, .	38·13	5·37	·62	·43
Average of Insane, .	38·22	5·35	·53	·45

From the preceding table it will be seen that the difference of weight between the cerebrum and cerebellum of sane females and that of insane females is 0·53 for the cerebrum and 0·45 for the cerebellum. When the insane from Edinburgh and Montrose Asylums are classed together this will only bear the one conclusion, that there is but little decrease of weight in the cerebrum and cerebellum amongst insane females generally from the average standard in the sane, although when the insane are taken from individual asylums the difference is more striking.

The proportion that the cerebellum bears to the cerebrum in the sane and insane is as follows:—

	MALES.			FEMALES.		
	Cerebellum.		Cerebrum.	Cerebellum.		Cerebrum.
Sane, . . .	1	to	7	1	to	6·7
Insane, . . .	1	to	6·6	1	to	6·4

It appears thus that the difference of average weight between the sane and insane in both sexes, when calculated from all ages, is dependent upon an increase in the average weight of the cerebrum, and that the weight of the cerebellum is little affected by insanity.

The extreme weights of the human brain for the sane, as observed by Dr Peacock, and also those for the insane who have died in the Montrose Asylum, are given in the next table:—

SANE.								INSANE.							
Heaviest.				*Lightest.*				*Heaviest.*				*Lightest.*			
Males.		Females.		Males.		Females.		Males.		Females.		Males.		Females.	
oz.	dr.	oz.	dr.	oz.	dr.	oz.	dr.	oz.	dr.	oz.	dr.	oz.	dr.	oz.	dr.
62	12	54	0	34	0	36	12	60	0	53	12	34	0	31	0
Above mean.				Below mean.				Above mean.				Below mean.			
12	8	9	7½	16	3½	7	12½	9	12½	9	3½	16	3½	13	8½

The question of the increase in the weight of the brain in proportion to the intellectual power seems difficult to settle.[1] It is true that the brains of such men as Cuvier, Spurzheim, Chalmers, Abercrombie, and Goodsir, have as much exceeded the average weight of the human brain as their intellectual power exceeded the average; but, excluding such men as the above named, it must be concluded that, as far as has yet been proven, no definite statement can be made as to the relation that the brain-weight has to the intelligence. Subjoined are the cases of the persons who have died in the Montrose Asylum possessing the extreme brain-weights, and in a tabular form is given the weights of all their organs, together with the average weight of the organs in the sane.

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[1] Two males have died in the asylum recently, the one an imbecile, æt. 75, and the other an epileptic idiot, æt. 18. The brain of the imbecile weighed 63 oz. 4 dr., and that of the idiot 48 oz. The brain-substance in both was apparently normal.

CASE 1. (Male, brain weighing 60 oz.)—W. B., æt. 69, a shoemaker, of ordinary education and regular habits, became very much depressed on the death of his wife, the depression being followed by a maniacal attack, for the treatment of which he was sent to the asylum. Seven years after admission into the asylum he became partially demented, and died of suffocation from choking. At the post-mortem the brain-substance was noticed to be dense, otherwise apparently normal.

CASE 2. (Female, brain weighing 53 oz. 12 dr.)—Mrs C., æt. 43, a married woman, formerly a domestic servant, was admitted into the asylum labouring under mania. She died four months after admission of heart disease. At the post-mortem considerable venous congestion of the brain was observed, otherwise it was apparently normal.

TABLE VI.—*Weight of the different Organs in the Cases of the Male and Female who died in the Montrose Asylum possessing the Heaviest Brain-Weights, and contrasted with the Averages for the Sane.*

	Males.				Females.			
	Insane.		Sane Average.		Insane.		Sane Average.	
	oz.	dr.	oz.	dr.	oz.	dr.	oz.	dr.
Encephalon, .	60	0	50	3½	53	12	44	8½
Cerebrum, .	52	8	43	15¾	48	0	38	12
Cerebellum, .	7	8	6	6¾	5	12	5	12
Heart, . .	13	8	11	0	19	8	9	0
Right Lung, .	25	8	24	0	24	0	17	0
Left Lung, .	24	0	21	0	31	8	15	0
Liver, . .	45	0	48 to 58	0	69	12	40 to 50	0
Spleen, . .	5	0	5	7	8	12	4	6
Right Kidney, .	4	4	5	8	5	8	4	12
Left Kidney, .	4	8			5	8		

CASE 3. (Male, brain weighing 34 oz.)—A. M., æt. 43, a carpenter, who laboured under general paralysis. He is stated to have had a hereditary tendency to insanity. He had hallucinations of sight. Fifteen months after admission, he was demented, ground his teeth, and could not articulate or walk correctly. It was observed that in bed he always lay with his head flexed forward and not resting on the pillow; during all the time he was in the asylum he was never found asleep. He died twenty months after admission of a congestive attack. At the post-mortem upwards of ℥viii. of fluid was

collected from the arachnoid sac; the membranes were adherent to the cortical substance; the ventricles were much distended with fluid; and their floors covered with granulations.

CASE 4. (Female, brain weighing 31 oz.)—M. F., æt. 72, laboured under senile dementia. She died of old age. At the post-mortem the brain-substance was found to be extremely œdematous, and the arachnoid contained a large quantity of fluid, as did also the ventricles.

TABLE VII.—*Weight of the different Organs in the Cases of the Male and Female who died in the Montrose Asylum possessing the Lightest Brain-Weights, and contrasted with the Average for the Sane.*

	MALES.				FEMALES.			
	Insane.		Sane Average.		Insane.		Sane Average.	
	oz.	dr.	oz.	dr.	oz.	dr.	oz.	dr.
Encephalon, .	34	0	50	3½	31	0	44	8½
Cerebrum, .	27	8	43	15¾	25	8	38	12
Cerebellum, .	6	8	6	3¾	5	8	5	12½
Heart, . .	11	12	11	0	8	0	9	0
Right Lung, .	28	12	24	0	12	0	17	0
Left Lung, .	24	12	21	0	7	0	15	0
Liver, . .	46	4	48 to 58	0	27	8	40 to 50	0
Spleen, . .	6	12	5 to 7	0	4	0	4 to 6	0
Right Kidney, .	5	8	5	8	2	0	4	12
Left Kidney, .	4	12			2	0		
Height, . .	5 ft. 7 in.		5 ft. 6½ in.		5 ft.		5 ft. 2 in.	

In the instances of the heaviest male and female brains, neither their cases nor the autopsy reveal anything to account for their great weight; but, in the instances of the lightest brains, the cases show dementia previous to death, and the autopsy shows in both the male and female very large effusions of serum into the arachnoid sac and ventricles, and in them water seems to take the place of brain-substance. The age at which the brain is considered to reach its maximum weight is variously stated by different writers, both as regards it, when taken as a whole, and also in its individual parts. Generally speaking, the period when man is in his highest state of development may be reckoned as between the twenty-fifth and fifty-fifth years, and it is consequently to be inferred that, during that time, the brain would have its greatest average weight. The following table gives the averages of the brain-weight in the period above mentioned, both amongst the sane and insane.

TABLE VIII.—*Average Weight of the Encephalon in the two Sexes between Years 25 and 55.*

	SANE.					
	Males.		Females.		Difference.	
	oz.	dr.	oz.	dr.	oz.	dr.
Encephalon, .	50	3½	44	8½	5	11
Cerebrum, .	43	15¾	38	12	5	3¾
Cerebellum, .	6	3¾	5	12½	0	7¼

INSANE.

	Males.		Females.		Difference.	
	oz.	dr.	oz.	dr.	oz.	dr.
Encephalon, .	48	4	44	6	3	14
Cerebrum, .	42	3	38	12	3	7
Cerebellum, .	6	5	5	10	0	11

In this table the sane are taken from a table by Dr Reid, in his "Physiological, Anatomical, and Pathological Researches." It will be seen from this table that there is no change in the general average of the insane male encephalon whether it be calculated from all ages or only in the period from 25 to 55, whilst in the insane female the encephalon is brought nearer that of the sane when calculated from the weighings between 25 and 55. Dr Thurnam considers that the sane encephalon has its highest weight in males in the decennial period from 30 to 40, and in females previous to the 30th year.

TABLE IX.—*Average Weights of Sane and Insane in Decennial Periods.*

Decennial Periods.	Encephalon.				Cerebrum.				Cerebellum.			
	Males.		Females.		Males.		Females.		Males.		Females.	
	Sane.	Insane.	Sane.	Insane.	Sane.	Insane.	Sane.	Insane.	Sane.	Insane.	Sane.	Insane.
	oz. dr.	oz. dr.	oz. dr.	oz. dr.	oz. dr.	oz. dr.	oz. dr.	oz. dr.	oz. dr.	oz. dr.	oz. dr.	oz. dr.
To 30 yrs.	47 12	47 9	42 $0\frac{1}{4}$	46 6	41 11	41 8	36 $12\frac{1}{8}$	40 7	5 13	6 0	5 $1\frac{1}{2}$	5 15
30 to 40 "	51 $0\frac{24}{41}$	49 9	45 $3\frac{8}{23}$	43 3	45 $1\frac{6}{7}$	43 $0\frac{1}{16}$	39 $1\frac{13}{25}$	37 8	6 $5\frac{16}{28}$	6 2	5 $9\frac{11}{15}$	5 11
40 to 50 "	49 $3\frac{37}{44}$	46 13	45 $2\frac{11}{13}$	45 3	43 $5\frac{6}{32}$	40 6	40 $0\frac{1}{3}$	39 10	6 $4\frac{31}{32}$	6 4	5 $15\frac{3}{8}$	5 9
50 to 60 "	49 $10\frac{1}{2}$	47 4	44 13	44 9	33 $11\frac{11}{16}$	40 14	38 0	38 14	6 $2\frac{8}{14}$	6 10	5 $4\frac{1}{2}$	5 11
60 to 70 "	48 8	49 12	43 $3\frac{4}{14}$	43 11	43 $8\frac{3}{5}$	43 8	37 $10\frac{6}{14}$	37 15	5 13	6 4	5 9	5 12
70 and upw.	48 $1\frac{3}{5}$	46 6	42 11	40 3	42 $3\frac{3}{5}$	40 4	37 0	34 10	5 $13\frac{3}{5}$	6 0	5 8	5 10

In Table IX. the insane are seen to correspond very nearly with the statement made by Dr Thurnam regarding the sane; for, although the highest average given for the insane in the decennial periods is between the years 60 and 70 in the males, still that between 30 and 40 is almost equally high, being for the first 49 oz. 12 dr., and for the second 49 oz. 8 dr.; and there may have been some cause for the increase between 60 and 70 amongst the insane that I have failed to discover. In Table IX. the weights of the sane are taken from a table by Dr Peacock; and Tables X. and XI. are constructed from tables given by Dr Skae in his appendix to his report previously mentioned, along with the weighings from the Montrose Asylum. These tables include the numbers weighed, the heaviest and lightest, with the averages in the decennial periods for both sane and insane. On the left of the sane column are the weighings from the Montrose, and on the right those from the Edinburgh Asylum.

TABLE X.—*Comparative Weights of Brains in Sane and Insane.*

MALES.

Age.	Numbers Weighed.									Heaviest.								
	Encephalon.			Cerebrum.			Cerebellum.			Encephalon.			Cerebrum.			Cerebellum.		
	Insane.	Sane.	Insane.	Insane.	Sane.	Insane.	Insane.	Sane.	Insane.	Insane.	Sane.	Insane.	Insane.	Sane.	Insane.	Insane.	Sane.	Insane.
										oz. dr.	oz.dr.	oz.dr.	oz. dr.	oz. dr.	oz. dr.	oz. dr.	o. d.	o. d.
To 30, .	7	48	19	7	32	19	7	33	19	51 0	61 2	57 12	45 0	54 0	52 0	7 4	7 2	7 8
30 to 40, .	30	41	26	30	28	26	30	28	26	58 4	62 8	56 0	51 4	54 8	49 8	8 0	7 8	7 12
40 to 50, .	11	44	25	11	32	25	11	32	25	58 8	62 12	58 0	48 0	49 0	50 8	7 8	7 10	8 0
50 to 60, .	21	32	18	21	28	18	21	29	18	53 0	55 15	58 8	46 12	48 14	52 0	7 8	7 9	7 10
60 to 70, .	20	18	8	20	10	7	20	12	7	60 0	60 4	52 8	52 8	51 13	45 8	7 8	7 4	7 8
70 and upwards, .	11	8	2	11	8	2	11	8	2	54 4	53 5	52 12	48 12	46 16	46 6	7 0	6 8	6 6
Total & Aver.	100	191	98	100	138	97	100	142	97	54 5	59 5	55 14	47 14	50 13	49 5	7 10	7 6	7 7

	Lightest.									Average.								
	Encephalon.			Cerebrum.			Cerebellum.			Encephalon.			Cerebrum.			Cerebellum.		
	Insane.	Sane.	Insane.	Insane.	Sane.	Insane.	Insane.	Sane.	Insane.	Insane.	Sane.	Insane.	Insane.	Sane.	Insane.	Insane.	Sane.	Insane.
	oz.dr.	oz. dr.	oz.dr	oz.dr.	oz.dr.	o. d.	o. d.	o. d.	o. d.	o. d.	oz. dr.	oz. dr.	oz. dr.	oz. dr.	oz. dr.	oz. dr.	oz. dr.	oz. dr.
Ages as above.	38 0	38 0	39 0	37 0	34 0	33 8	4 12	5 4	5 4	47 9	50 14	49 10	41 8	43 3	43 3	6 0	6 4	6 7
	40 8	40 8	44 0	32 8	35 9	37 8	5 4	5 1	6 0	49 9	51 1	50 1	43 1	45 2	43 6	6 12	6 6	6 11
	30 4	34 0	41 12	27 8	37 13	36 0	5 8	5 6	5 0	46 13	49 4	49 4	40 6	43 5	42 8	6 4	6 5	6 12
	39 0	40 9	41 2	32 0	37 11	39 14	4 12	5 8	5 14	47 4	49 10½	49 12½	40 14	43 12	43 6	6 10	6 2½	6 6½
	40 0	40 0	44 0	35 12	34 8	38 10	5 0	4 15	5 12	49 13	48 4	48 2	43 8	43 8	41 11	6 4	5 13	6 7
	40 12	42 2	52 12	35 8	39 8	46 6	5 8	5 9	6 6	46 6	48 15½	52 12	40 4	42 15	46 6	6 0	6 0½	6 6
Aver.	39 3	39 3	43 12	33 6	36 8	38 10	5 2	5 3	5 12	47 14	49 11	49 14½	41 9½	43 10	43 6	6 5	6 2	6 8

TABLE XI.—*Comparative Weights of Sane and Insane Brains.*

FEMALES.

Age.	Numbers Weighed.									Heaviest.								
	Encephalon.			Cerebrum.			Cerebellum.			Encephalon.			Cerebrum.			Cerebellum.		
	Insane.	Sane.	Insane.	Insane.	Sane.	Insane.	Insane.	Sane.	Insane.	Insane.	Sane.	Insane.	Insane.	Sane.	Insane.	Insane.	Sane.	Insane.
										oz. dr.	o. d.	o. d.	oz. dr.	oz. dr.	oz. dr.	oz. dr.	o. d.	o. d.
To 30, .	6	40	15	6	31	15	6	31	15	52 0	50 0	53 0	45 4	43 14	45 8	7 0	6 8	8 0
30 to 40, .	18	33	29	18	25	29	18	25	29	48 0	54 0	61 8	42 12	45 2	54 8	6 8	6 8	7 6
40 to 50, .	14	23	24	14	18	24	14	18	24	53 12	53 0	53 0	48 0	47 0	47 0	6 8	7 0	6 6
50 to 60, .	29	7	20	29	6	20	29	6	20	51 8	46 3	53 8	45 8	40 13	47 8	6 4	5 9	6 8
60 to 70, .	21	14	13	21	14	13	21	14	13	52 8	48 12	50 0	47 0	41 2	44 0	7 0	6 0	7 0
Total & Aver.	88	117	101	88	94	101	88	94	101	51 9	50 6	54 3	45 11	43 9	47 11	6 10	6 5	7 1

	Lightest.									Average.								
	Encephalon.			Cerebrum.			Cerebellum.			Encephalon.			Cerebrum.			Cerebellum.		
	Insane.	Sane.	Insane.	Insane.	Sane.	Insane.	Insane.	Sane.	Insane.	Insane.	Sane.	Insane.	Insane.	Sane.	Insane.	Insane.	Sane.	Insane.
	o. d.	oz. dr.	o. d.	o. d.	o. d.	o. d.	o. d.	o. d.	o. d.	o. d.	oz. dr.	oz. dr.	oz. dr.	oz. dr.	oz. dr.	oz. dr.	oz. dr.	oz. dr.
Ages as above.	41 4	39 0	37 12	35 12	35 8	31 12	5 8	4 12	4 8	46 6	43 15	48 0	40 7	38 6	36 10	5 15	5 8	5 9
	34 8	38 0	39 8	28 8	32 12	33 8	3 0	4 4	5 0	43 3	45 3	46 0	37 8	39 1	40 0	5 11	5 9	6 0
	36 4	36 12	37 0	31 0	32 8	31 4	4 12	4 4	4 12	45 3	45 3	44 9	39 10	40 0	38 11	5 9	5 15	5 14
	37 8	43 9	39 8	32 8	38 1	34 0	5 0	4 15	5 0	44 9	44 13	46 1	38 14	38 0	40 2	5 11	5 4	5 14
	37 4	36 2	34 12	32 0	31 2	30 0	4 12	5 0	4 12	43 11	43 3	44 5	37 5	37 10	38 6	5 12	5 9	5 15
Aver.	37 5	38 11	37 11	31 15	33 15	32 1	4 9	4 10	4 12	44 9	44 7	44 12	38 12	38 9	38 12	5 11	5 9	5 13

Although the preceding observations are made from a series of weighings much too scanty to permit of any absolute conclusion, they seem to support the view that insane brains differ from sane as regards weight in being slightly lighter; that this is dependent on a decrease in the weight of the cerebrum—there being no loss of weight in the cerebellum; and that the cases of chronic insanity and dementia in which serous effusions and œdema of the brain-substance are so often met with, furnish a probable cause for the decrease. There seems no reason to suppose that in cases of recent insanity any difference between the weights of sane and insane brains is to be detected.

ARTICLE IV.—*Colonial Lunacy Boards; with special reference to New Zealand.* By W. LAUDER LINDSAY, M.D., F.R.S.E., Physician to the Murray Royal Institution (for the Insane), Perth.

I SPENT four or five months at the close of 1861 and beginning of 1862 travelling through, or residing in, the New Zealand provinces—remaining about three months in Otago and one in Auckland, but paying visits of only one, two, or three days in Nelson, Wellington, and Taranaki. I gave special attention wherever I went to the subject of *Insanity and its treatment.* In Dunedin, Nelson, and Auckland I visited the various public receptacles for the custody of the Insane under the auspices of the Government or civic authorities, who placed at my disposal all printed documents necessary for my full information concerning their present and past condition. I would here acknowledge the facilities that were offered to me by these various authorities—medical or legal, official or private. More especially have I to record my obligations to certain public officials,[1] who have taken the trouble, since my return home, regularly to forward various Government reports or papers, as well as newspapers, containing information bearing on the local lunatic asylums, or on the condition of the local insane, and records of the progress or reform in opinion and practice in the lunacy affairs of the colony.

I had originally intended, as soon as possible after return home in 1862, to embody the results of my whole inquiry—*On the present State of Insanity and its Treatment in New Zealand, with the suggestions therefrom arising*—in a full Report on the subject. But many circumstances have conspired to prevent my doing more *as yet* than to draw attention to two of the subjects that seemed to me of the highest and most immediate importance to the New Zealand Government in relation to future legislative provision for the proper treatment of the rapidly-increasing number of its insane, viz.:—

(1.) The desirability of, if not the necessity for, the appointment of a *Central (or General Government) Board of Lunacy* competent to advise colonial legislators on all matters connected with insanity and its treatment, including, for instance, the construction of new laws, and the erection and regulation of proper public lunatic asylums.[2]

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[1] (1.) The Hon. Wm. Gisborne, Colonial Secretary, and John B. Bennett, Esq., Registrar-General, of the Colony, for the Annual "Statistics" of New Zealand—a valuable Government blue-book.

(2.) John Hislop, Esq., Secretary of the Education Board of Otago, for numerous Provincial or General Government papers, as well as for local (Dunedin) newspapers.

[2] "Suggestions for the proper Supervision of the Insane and of Lunatic Asylums in the British Colonies."—Brit. and Foreign Medico-Chirurgical Review for October 1869, p. 480.

Certain arguments for the establishment of Colonial Lunacy Boards are also

(2.) The propriety of devising effectual means of preventing the present wholesale transhipment from Great Britain and Ireland to New Zealand of certain classes of the insane.[1]

I am induced now to offer a further contribution of *suggestions* concerning the legislative provisions, which it is desirable to make for the treatment of the insane in New Zealand, by the consideration that the Colonial Government has just given signs of a disposition or readiness to do something in the direction of progress or reform in local lunacy matters. Inasmuch as my opinion was repeatedly invited or *requested*, alike by public authorities and private individuals interested in the condition of the insane, in New Zealand, and has since my return home been *expected*; and in so far, moreover, as it is only *due* to those who favoured me with materials for the formation of an opinion with the specific object in view that I should not only form one but give public expression thereto, I offer the following suggestions in the hope that they may yet be in time to aid in the formation of proper public opinion, or of directing into a proper channel certain contemplated legislative measures, in that colony.

The last New Zealand mail[2] brought me the following intelligence:—"The joint committee of the two Houses of Assembly appointed to consider the subject of our *lunatic asylums*, have agreed to the following resolutions, which are to be moved in the Legislative Council by the Hon. Dr Buchanan:"—

(1.) "That the asylums in the colony have not, save in some localities, either proper or sufficient accommodation for the reception and care of lunatics."

(2.) "That it is expedient that the *General Government* should take measures to cause proper provision to be made in those parts of the colony where the present provision is insufficient."

(3.) "That *a* duly-qualified medical officer from the United Kingdom, having special knowledge and experience in the treatment of the insane, be forthwith engaged and appointed, and who shall have the supervision and control over all the lunatic asylums in the colony."

(4.) "That the question of a *General Central Asylum* be postponed until next session, by which time information will have been obtained from reports of the inspecting medical officer, which will serve to guide the action of Parliament."

(5.) "That whilst steps should be taken to improve *all* the asy-

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contained in a paper on "The Family System as applied to the Treatment of the Chronic Insane," in the Journal of Mental Science, vol. xvi. (1871), p. 526, in which a Central Board for New Zealand is, a second time, strongly recommended.

[1] "Insanity in British Emigrants of the Middle and Upper Ranks."—Edin. Medical Journal for September 1869, p. 214.

[2] That which arrived in the beginning of January 1872.

lums in the colony, the state of that at Karori,[1] near Wellington, urgently requires immediate attention and reform."

(6.) "That the Honourable the Speaker be requested to transmit a copy of these resolutions to the Honourable the Colonial Secretary for the consideration of the Government, with the view of their being carried into effect."[2]

The following observations will be confined to a commentary on clause 3 of the foregoing resolutions. Assuming that the New Zealand Government recognises the importance of possessing at least *one Inspector* of Lunatic asylums for the colony, my present object is to discuss *what ought to be* his—

(1.) Qualifications.
(2.) Emoluments.
(3.) Duties.
(4.) Status—in relation, on the one hand, to Government and the public; and, on the other, to the medical or other authorities of the Provincial lunatic asylums.
(5.) Mode of selection and appointment.

Unfortunately, our colonies do not always "ride when they put on their spurs." Parliamentary bills are not always passed even when introduced, nor introduced when promised; so that the lunacy progress and reform at present looming on the political horizon of the colony *may* still be a thing of the distant future! So long ago as 1846, in clause 8 of the New Zealand "Lunatics Ordinance" of that year, it was enacted that "it shall be lawful for the Governor to nominate and appoint some fit person *or persons* to be visitor *or visitors* of such lunatic asylums within the colony; and to remove and displace the said visitor or visitors, and to appoint another or others in his or their stead: The persons so appointed shall visit such asylums and make reports thereon at such times and in such manner as the Governor shall from time to time direct and appoint." The intention of the Governor—then Sir George Grey—was obviously more liberal twenty-five years ago than is that of the Government of the present day, inasmuch as he contemplated, even in the infancy of the colony, the possibility at least of requiring *more than one Visitor* of the colonial asylums. No appointment, however, of a visitor or inspector has yet taken place,[3] and the natural result is the state of things now deplored by "the joint committee of the two Houses of Assembly." It is perhaps better, nevertheless, that such a delay should have occurred—provided the *right* man is *now* procured for the very difficult position he will be called upon to occupy—than that the example of certain others of our colonies, or of the United States of America, should have been followed by the appointment of an *in*competent person.

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[1] I do not appear myself to have seen the Karori Asylum (which is the Provincial asylum—for the province of Wellington, as well as for the city of Wellington, in which the New Zealand Parliament is now held) during my visit to Wellington in January 1862; but Major Blewitt, then of H. M. 65th Regiment, described it to me as situated about three miles inland; as consisting of a miserable small wooden hovel; and as inferior in character to the asylums of Auckland and Nelson, which I will have occasion by-and-by to describe in a separate paper on "The Lunatic Asylums of New Zealand."

[2] From the "Evening Star" (newspaper)—Dunedin, Otago, New Zealand, 25th October 1871.

[3] Similar delay in the carrying out of obviously necessary lunacy reform has occurred in New South Wales. So long ago as 1855, a voluminous Govern-

Already sundry and serious mistakes have been committed in consequence of the non-presence in the colony of any authority whom the Government could or would recognise or consult, *e.g.*, in the construction of the Lunatic Asylum of Dunedin.[1] It is so far fortunate that the old asylums at Nelson and Wellington still exist, while in other provinces or towns there are as yet no separate asylums at all; so that in these localities Government has now the opportunity of erecting *model* institutions, suitable to the requirements of the districts in the centre of which they ought to be planted.

Though the following remarks have special and immediate reference to *New Zealand* as the colony with which I am most familiar, and that in which I take the most vivid interest, they are equally applicable, *mutatis mutandis*, to British colonies as a group; and my suggestions are based on personal inquiry, made not only in New Zealand, but also in Australia, Canada, and the United States of America, as well as in the chief countries of continental Europe, in addition to the United Kingdom.

I. *Qualifications of a Colonial Commissioner[2] in Lunacy.*

It appears to me impossible to exaggerate the importance, to the lunacy system of a new country, of the qualifications of the authority or authorities who may be called upon to cast its first framework. In a young colony it is possible, nay it is easy—provided a Commissioner possess the requisite qualifications and is properly supported by his government and the public—for him to frame its lunacy system, its lunacy laws, and the regulations for the construction and organization of its public asylums, in such a way as to become a *model for imitation by other countries!* But, unfortunately, colonial

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ment "Report from the Commissioners of Inquiry on the Lunatic Asylums of New South Wales, with Minutes of Evidence, Appendix, and Replies to a Circular Letter," was published, containing strong recommendations of a revolutionary character. Thirteen years later, Dr Manning published his exhaustive official report, also containing a series of still more valuable and suitable recommendations. But, though certain changes were recently made, including the appointment of Dr Manning himself to the charge of the Gladesville Asylum, near Sydney, and to the Inspectorship of the lunatic asylums of the colony, his last official report (1871) shows that no radical change has yet occurred as regards the obviation of the evils complained of in 1855!

[1] *Vide* paper in the British and Foreign Medico-Chirurgical Review, for October 1869; footnote, p. 483.

[2] I use this term preferentially, because the word *visitor* or *inspector* represents only *one* of the many duties of such an official in a new colony; and not the most important of his duties, according to my view thereof.

legislators, with an overweening confidence in everything that is of *home* growth, and with an inordinate penchant for *home* precedents and *home* models, because they are of and from home, usually frame their lunacy laws and construct their asylums after the fashion of the faulty ones of *England*.[1] They act upon the adage, "There's no place like home," in a mischievous and absurd way—ignorant or oblivious of the fact that the lunacy system of England is admittedly corrupt, and that it cannot easily be reformed in an *old* country abounding in prejudice, vested interests, time-honoured customs, and hereditary creeds, however ridiculous or noxious these may be shown to be. In New Zealand the time has probably gone by when the greatest amount of good might have been effected by a competent government adviser in lunacy. For laws have been enacted and amended,[2] and asylums built, after the orthodox English fashion; and *after* money has been sunk and laws have taken hold, it is not easy to undo and substitute, however desirable progress or reform may be. On the other hand, there are several important provinces without proper asylums—*e.g.*, Nelson and Wellington; while there is still an opportunity of extending and simplifying the existing lunacy laws, so as to meet, for instance, the case of those pests of colonial society—the habitual drunkard or inebriate.[3]

The literal qualifications of the Inspector now required by the New Zealand Government are of such a vague and commonplace kind that they would include the *assistant*-physicians of British lunatic asylums. Possibly it is from *their* ranks that an inspector will have to be selected, for the simple reason that men occupying better positions will decline to exchange the comforts and advantages of *home* for the hard work and great responsibilities of a colonial inspectorship, for the dangers of colonial travel, for the discomforts of exile from home and friends, and for the wretched emoluments which are generally offered by colonial authorities. Hitherto colonial inspectors have been usually manufactured out of colonial asylum superintendents, who were originally *assistant*-physicians in British asylums. But I know of no case in which such inspectors would have suited the requirements of New Zealand, or of any colony whose ambition it is to frame a lunacy system that would do credit to it as a British colony. Nor could I recommend any assistant-physician of any British asylum as suited for a post, the qualifications of which are of so peculiar a kind as the inspectorship of lunatic asylums in New Zealand. Indeed, the desirable experience should be so varied and so extensive that very few Physicians-in-chief of British asylums are qualified for so difficult an office, even were they willing to exchange good positions or prospects at home for an undesirable position abroad. The qualifications requisite in the physician or assistant-physician of an ordinary British lunatic asylum are by no means of a common kind. Hence it happens that even in Britain, with its numerous medical schools and hosts of legally-qualified physicians and surgeons, it is sometimes difficult or impossible, under certain circumstances, to obtain a physician or assistant-physician whose qualifications are satisfactory to an experienced chairman of directors or physician-in-chief; and this difficulty arises, notwithstanding full advertisement both in the medical and general press. Of this I could easily cite certain recent instructive illustrations, including the case, for instance, of large emoluments failing to secure a single candidate eligible, in the opinion of, or acceptable to, a board of directors; or of physicians-in-chief preferring to do the work of several officers rather than submit to the infliction of the nominal aid of, and probable annoyance by, incompetent colleagues or subordinates! In all such cases there may be, and generally is, no lack of candidates of an *un*suitable kind; for in an old country, where medical practitioners are constantly being manufactured in large numbers by our universities and medical schools, many of them inevitably going to the wall, failing in the race for fame or fortune or in the struggle for bare subsistence, there can never lack *candidates of some sort* for every species of medical appointment, and particularly for such as offer a fixed competent income to the disappointed and unsuccessful. But, on the other hand, it is not every medical man that possesses the special qualifications necessary for the successful management of the insane—the government of a public institution with its large staff of different grades of officers—and the maintenance of proper relations with the friends of his patients, his board of directors, and the general public.[1] On the other hand, duly qualified physicians, who know the market value of their experience and reputation, will not wittingly condescend to accept inadequate salaries, inferior status, or uncomfortable relations to their fellow-officers or to boards of directors. In other words, *proper* candidates do not respond to attractive advertisements, sometimes because the salaries and other allowances offered are utterly inadequate inducements to the acceptance of office; sometimes because even the highest salaries offered in this country are regarded by sensible men as insufficient to atone for all the *miseries arising from false position*—the fruit of mis- or over-government by boards of managers, of the vagaries of directors ignorant of the requirements of the insane and of hospitals for their treatment, but, at the same time, jealous and fond of the power which they unfortunately possess, and of which they make sometimes most mischievous use. If such, then, be the difficulty of obtaining from among the numerous ranks of medical men in Britain, officers specially qualified for the management of British lunatic asylums, it may easily be conceived how much greater must be, and is, the difficulty of selecting from among the limited number of British asylum physicians, a gentleman possessing those very unusual qualifications that *ought to be* the attributes of a *proper* colonial commissioner in lunacy. For it is not enough that such an officer should have had abundant personal experience in the administration of a British asylum, and a thorough practical knowledge of the working of the lunacy laws of the three kingdoms. He should also possess a knowledge of the lunacy systems of other countries,[1] some of which offer *better models for New Zealand* than either England, Scotland, or Ireland. But such knowledge implies travel, and the qualifications for successful travel, and for the due appreciation and application of the opportunities it offers. Perhaps the most important country for a colonial lunacy commissioner to visit is the United States of America.[2] And yet there are very few of our asylum physicians who have acquainted themselves, (1) by personal visitation, with the numerous and important lunatic asylums of states differing so much in climate and population from Britain and from each other, and, what is of more importance, so much more closely resembling the various British colonies in their requirements (*quoad* the treatment of the insane) than does the old country; or (2) by reading, with their various lunacy laws, which, as a rule, compare most favourably with ours as to brevity and simplicity.

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[1] I will touch more fully on this subject in a separate paper on "Lunacy Legislation in New Zealand;" meanwhile, I may refer the reader to what I have said in the British and Foreign Medico-Chirurgical Review for October 1869, p. 488.

[2] There are at least three General Government statutes in New Zealand affecting lunatics and lunatic asylums, of dates respectively 1846, 1858 (amendment), and 1868 (repeal, amendment, and consolidation).

[3] On this subject the reader may consult two papers on "Legislation for Inebriates" in the Edinburgh Medical Journal for September and October 1870.

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[1] I have repeatedly found young medical men, well posted up in their profession, nevertheless *un*suitable for lunatic asylum appointments by reason of their want of common sense, of shrewdness and tact, of the administrative faculty, of the proper combination of the "*suaviter in modo*" with the "*fortiter in re*."

No doubt, the Inspector selected by the New Zealand Government might—and undoubtedly should—supply the deficiencies (if any exist) in his experience or information by what may prove to be the only means now in his power. Prior to the assumption of duty in the colony, he should visit those countries, throughout the world, which are most advanced in civilisation (including especially each of the three kingdoms, the United States, Germany, and France), in order to inspect the most modern hospitals for the insane, and, what is of more importance, the most modern *systems of treatment*, including especially the *family system as illustrated in Belgium and Scotland*[3]—which is fully described in the paper mentioned in the footnote on page 807. He should procure (1) plans of those hospitals which most commend themselves to his notice as suitable for colonial requirements; (2) copies of the most succinct and simple lunacy laws—especially those of the United States;[1] (3) of reports of boards of lunacy or inspectors of asylums, and of hospitals for the insane; (4) of all the simplest formalities of admission of patients into hospitals; (5) of standard works on insanity and its jurisprudence; and generally of all useful published documents pertaining to the insane and their management. These public documents ought to form the nucleus of a colonial *lunacy library* of reference—to be annually added to by the publications constantly being issued from the press in Europe and America, relating to insanity and its treatment. Such a reference library would be of great use—I might almost say indispensable—not only to the colonial lunacy commissioner, but to the local legislators, and to the authorities of the different provincial asylums. The collection of such documents, and the visits to foreign countries necessary therefor, might fitly occupy six months, or even a year, prior to the assumption of a commissioner's duty. His own time would be well spent; and the cost well invested by the colony for its use in all future time. Moreover, there is a precedent in the fact that all this was done on behalf of the neighbouring colony of New South Wales some years ago by Dr Manning, now its Inspector of Asylums; and done so well that the result of his labours was the production of the best practical report—on the whole subjects necessary for the information of a colonial legislature or board of lunacy—that has yet appeared in the English, or in any other, language.

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[1] *Vide* also what I have said on this subject in the British and Foreign Medico-Chirurgical Review for October 1869, p. 486.

[2] The special excellences of whose lunacy laws and lunatic asylums I have enumerated in a paper on "American Hospitals for the Insane, compared with those of Britain," in the Edinburgh Medical Journal for December 1870.

II. *Emoluments of a Colonial Lunacy Commissioner.*

Most extraordinary appear to be the ideas of colonial government authorities regarding the market value of the services of British physicians highly trained in the special department of lunacy. They bid invariably for the services of first-class men—of great experience, and of acknowledged ability; but they commit the folly of expecting such men to sacrifice all their home advantages, and emigrate to a distant colony, where their duties and responsibilities must be infinitely greater, their personal comforts or pleasures infinitely less, than in the dear "old country"—dear even to colonial-born children of settlers from Britain. And for what? A salary generally much below what even a second-rate man can command at home. There may be, and probably there are, men to whom it would be a great inducement to have the opportunity of moulding or forming the lunacy system of a new country: and to such men such an opportunity would count for more than mere *salary and allowances*. But there is no guarantee, and indeed small likelihood, that a colonial lunacy commissioner, however experienced and able, will be permitted to carry out his own ideas at the public expense: for, just as at home, there are such obstacles to progress in *all* our colonies as official red-tape; public prejudice, ignorance or apathy; and political intrigue that will sacrifice everything to party and power for the moment. Even the enthusiast, however, must live; and he must make due provision for his own old age, and for his family, or other dependents. Practically, there can be no doubt that it is *salary* that usually or mainly determines the acceptance or non-acceptance of colonial lunacy appointments by British physicians; and it is a simple fact that, as yet, no first-class man has been induced to accept any of these appointments: while those second-rate men who have done so, have, in several instances at least, lost little time in finding their way home again. In New Zealand, £600 a year is apparently regarded as a handsome salary for a government or public official. This is what the New Zealand Government gives the Director ot its Geological Survey; what it proposes to give to a Colonial Secretary of Education; what the University of Otago has given to each of its four Professors. But, even at home, third-rate men can easily command, and do occupy, positions yielding higher emoluments; besides possessing comforts, which no similar position in New Zealand *can* possibly offer for many a year. In order to show how utterly inadequate such a salary will be to secure for New Zealand, or any other colony, a *competent* lunacy commissioner; and in order to give the New Zealand Government a basis for its calculations as to the salary and other allowances it *ought to offer* to such an officer,—I venture to tabulate certain financial statistics, which form part of a much larger mass of similar statistics, collected for a different purpose and arranged in 1870.

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[1] The Inspector-elect for New Zealand should go by San Francisco—across the American continent, and through some of the principal States of the Union—stopping here and there to visit the best American asylums, and to confer with the leading lunacy authorities. Not only is it the quickest and most pleasant route, but it is in all respects ultimately the most *profitable*.

The said tabulation is confined to the emoluments of British and other *medical practitioners in lunacy.*[1] But it is far from representing adequately their *maximum* emoluments. For, in the first place, the highest emoluments are probably those of the physician-proprietors of *private* asylums,—of whom several in England—one or two in Scotland and Ireland—in all probability make an annual income considerably greater than that of the Lunacy Commissioners of England, who are the best paid lunacy officials in the United Kingdom. We have not, in the case of these private practitioners, the same means of ascertaining their emoluments as in that of lunacy commissioners or other government or public officials, viz., blue-books, asylum reports, or the written statements of secretaries or treasurers of public boards. So that, in their case, the exact, or even the average or approximate, emoluments cannot be quoted. It is obvious, however, that they must be of a more fluctuating character than the fixed salaries of public officers. Secondly, in many cases the salary quoted is that of recent appointments. But an officer who has spent ten to twenty years or upwards in the service of a public asylum, and whose faithful and zealous labours have commended themselves to its directors, usually obtains an increment of salary—in some cases to an extent that doubles the original amount; in other cases adding to it by as much as £300 a year. In some instances there is a fixed annual increment with length of service. Thus, in the new asylum for the city of Newcastle-upon-Tyne, the physician's salary (I am told) begins at £250; but rises by £50 a year to £500—his additional allowances being board and lodging, including wine, and three servants. Thirdly, it is most difficult to estimate the value of what are called *allowances*: which include detached house, or apartments in the asylum, for the physician and his family; household furniture and fixtures; fuel and lighting; washing; attendance—including both men and maid servants; garden produce—including fruit; dairy or farm produce—including milk and potatoes; the use of carriage or horses. House-rent, for instance, varies extremely according to the value and position of the house. Several British asylum superintendents live in handsome villas that cost between £2000 and £3000; and such houses in the suburbs of London, Dublin, or Edinburgh would bring an annual rent of £100 to £200; but, in the provinces—especially when quite in the country, several miles distant even from the county town—the assessed rental of such a house may be only £50 to £70. Again, it must be obvious that the value of coals, gas, garden and farm produce, meat and bread, must be greater in or near large cities, such as London, Dublin, or Edinburgh, than in purely rural districts, such as Devonshire or Somersetshire. Unquestionably, the best judges of the value of the various *allowances* above mentioned are the gentlemen who enjoy them. A few illustrations will show how greatly it varies in different cases. Thus, the present Physician-Superintendent of the Bloomingdale Asylum, New York, told me, when I visited him in April 1870, that he regarded his consultation practice as worth from £200 to £300 a year; and his board and other allowances as equal in value to his official salary = £1000 a year. Dr Pliny Earle, of the Massachusetts State Asylum at Northampton, described, when he visited me at Perth last summer (1871), his keep as equal to his salary—that is, worth £500 a year (= 2500 dols.) Dr Manning—in his admirable Report on the Lunatic Asylums of Europe and America—says that an income of or equal to £1000 to £1200 (= 5000 to 6000 dols.) a year is not uncommon among the Physicians to the United States Lunatic Asylums—seeing that they usually have handsome board for themselves and families, in addition to a residence, with use of carriage and horses, and other advantages. In the West Riding of Yorkshire Asylum at Wakefield, the allowances—which include "everything found" except wines and spirits—are estimated as equal to the officer's salary. In the Melbourne Asylum, £400 a year is their equivalent in money. In the case of one of the two physicians to the Hanwell Asylum, near London—who has board as well as residence—his allowances are probably equal to £300 a year. In the Carlow District Asylum, at Maryborough, Ireland, the allowances—which include furnished house, bread, milk, butter, vegetables, coals, gas, washing, and attendance (two servants)—are valued at £200 a year. The sum temporarily allowed to the recently appointed Superintendent of the New Royal Infirmary of Edinburgh for *house-rent* is £80 a year. Even in the case of asylum *matrons*, allowances are valued at £150 to £200 a year. Thus, the Matron of the North Riding of Yorkshire Asylum at Clifton has £150 "in lieu of rations;" while the Matron of the Middlesex Asylum at Hanwell has, or had recently, £120 in lieu of board; with the wages of two servants, paid by the county; all her cooking done in the asylum kitchen; provisions from the asylum stores at cost (contract) price; washing in the asylum laundry; furnished apartments; coals and gas—the total certainly equal to at least £200 a year.

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[1] On this subject, the reader may also consult Dr Manning's "Report on Lunatic Asylums," 1868, p. 80.

I have no doubt that the estimated total money value of the official position of the physicians enumerated in the following table is *under*-rated and *under*-stated; but to what (varying) extent, it is impossible for me to discover or specify. I cannot, therefore, hope that the said table is perfectly accurate in its minutiæ. But I believe it to be sufficiently so for all present purposes—for which all that is necessary is an *approximate* statement. It has to be noted also, that the emoluments quoted are not cited as illustrations of *adequateness* to the positions occupied. On the contrary, if they are contrasted with the emoluments of many other professional men, of a comparable class as to culture and rank, they must be regarded as more or less *in*adequate! For instance, I might point to—

(1.) Medical appointments in India, where one college contemporary has £2400 a year (= 2000 rupees a month) as Sanitary Commissioner; while another had £1200 a year (= 1000 rupees per month), besides a house, as superintendent of a botanic garden: both of them entitled to correspondingly handsome retiring allowances.

(2.) The clergy, and especially the dignitaries, of the English Church, and some of those of the Scotch and Irish Churches.

(3.) The head-masters, or ordinary masters, of certain English public schools, such as Eton and Harrow.

(4.) Certain professors in the Universities of the three kingdoms, of Germany, and of certain British colonies.

(5.) Certain sheriffs-substitute and procurators-fiscal of Scotland.

(6.) The town-clerks of certain Scotch cities.

(7.) The governors of certain British prisons.

The illustrations contained in the following Table are given simply as showing the current market value—(a value which has risen greatly of late years with the increased value of other kinds of labour, and which continues to rise in all parts of the United Kingdom)—of the services of the middle or ordinary, and higher, grades of British medical lunacy practitioners.

Country and Official Position.	Annual Salary.	Other Allowances.	Probable (Total Minimum) Annual Value of Office.
I. ENGLAND :—	£		£
1. *Board of Lunacy*—Six paid (or acting) Commissioners; three Medical and three Legal; each at	1500	Travelling expenses, at a fixed rate per day, . .	1500
2. *Visitors of Chancery Lunatics*—Two Medical, each at	1500	Do. do.	1500
3. *Physician-Superintendents of County or other Public Asylums*—			
1. Wakefield, W. Riding of Yorkshire—			
Present occupant, ...	500	Furnished house; board, attendance, and washing for self and family; use of carriage and horses, . .	1000
Previous occupant, ...	1000	Do. do.	1300
2. Brentford, Essex, ...	800	Apartments; coals, gas, vegetables, washing, . .	900
3. Northampton, ...	800	Unfurnished house; coals, gas, vegetables, . .	900
4. Bethlem, London, ...	750	Apartments, partly furnished; coals, gas; pupils' fees,	850
5. Prestwich, Lancashire—			
Previous occupant, ...	750	Apartments; coals, gas, washing, ...	850
Present occupant, ...	600	Do. do.	700
6. Lincoln, ...	650	Furnished house; coals, gas, vegetables, washing, .	750
7. Lancaster, ...	600	Do. coals, gas, washing, milk, vegetables,	700
8. Clifton, North Riding of Yorkshire,	600	Do. do. and garden produce, .	700
9. Colney Hatch, London—			
Two Physicians-in-chief, each at .	600	Lodging; coals, gas, butter, milk, and vegetables, . One of them with class fees,[1]	700 700
10. Hanwell, London—			
Two Physicians-in-chief; one at .	600	Detached house, furnished, free from rates and taxes; coals and gas, ...	700
The other at	400	Board and lodging for self and household, . . .	700

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[1] As Professor of Psychological Medicine in King's College, London.

Country and Official Position.	Annual Salary.	Other Allowances.	Probable (Total Minimum) Annual Value of Office.
I. ENGLAND—*continued.*	£		£.
11. Derby, ...	400	Furnished apartments; board for self and family; attendance (three servants), ...	700
12. Wells, Somersetshire, . . .	500	Furnished house, free from rates and taxes; coals, gas, milk, vegetables, washing, ...	600
13. Worcester, ...	600	Furnished house (detached); coals, gas, vegetables, and washing; consultation practice, ...	800
14. Devizes, Wiltshire, . . .	500	£100 in lieu of board; furnished house; garden produce, washing, ...	700
15. Arlesey, Hertfordshire, ...	550	Furnished house; coals, gas, washing; half an acre of garden ground, ...	650
16. Abergavenny, Monmouthshire, .	550	Furnished house; gas, and use of gardens, . .	650
17. Rainhill, Lancashire, . . .	450	Board and lodging (furnished house), ...	750
18. Exminster, Devonshire, ...	500	Furnished house; coals, gas, vegetables, washing, .	600
19. Haywards Heath, Sussex—			
Previous occupant, ...	650	Do. do.	750
Present occupant, ...	500	Do. do.	600
20. Durham, ...	500	Do. coals, gas, washing; farm produce,	600
21. Glamorgan, ...	500	Unfurnished house; gas, and use of garden, . .	600
22. Carlisle, ...	500	Unfurnished house; garden; coals, gas, washing, pony,	600
II. SCOTLAND:—			
1. *Board of Lunacy*—Two Medical Commissioners, each at	1000[1]	Fixed allowance for travelling expenses, . . .	1000
Two Deputy Medical Commissioners, each at	600	Do. do.	600
2. *Physicians to the Royal Asylums*—			
1. Edinburgh, ...	800	Detached house (furnished); class fees; consultation practice, ...	1000

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[1] According to the Pnblic Boards (Scotland) Commission of 1870; but £1200 according to sect. iv. Act 20 and 21 Vict. cap. 71.

Country and Official Position.	Annual Salary.	Other Allowances.	Probable (Total Minimum) Annual Value of Office.
II. SCOTLAND—*continued.*	£		£
2. Glasgow, ...	800	Apartments, partly furnished; coals, gas, vegetables, washing; beef and bread at contract prices; consultation practice, ...	1000
3. Dumfries, ...	550	Detached house; boarders; coals, gas; use of carriage; consultation practice, ...	800
4. Montrose, ...	500	Detached house; carpets, garden, coals, gas; use of carriage; consultation practice, ...	600
5. Aberdeen, ...	500	Detached house; class fees; consultation practice, .	600
III. IRELAND:—			
1. *Board of Lunacy*—Two Medical "Inspectors and Commissioners of Control of Asylums," each beginning[1] at .	900	....	1000
2. *Physician-Superin. of Public Asylums*—			
1. Richmond Asylum, Dublin, . .	550	Unfurnished apartments; fuel, light, bread, milk, vegetables, and washing,[2]	650
2. Cork District Asylum, . . .	430	Fuel, light, washing, and garden,[3]	580
IV. AUSTRALIA:—			
Physician-Superintendents of Colonial Asylums—			
1. Victoria, Melbourne—			
Present occup., £800 for first two years:	then 900[4]	£400 in lieu of sundry allowances, ...	1300
Previous occupant, ...	610	House and other allowances, ...	800

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[1] There is, however, an annual increment, but at what rate and to what maximum I am not aware.

[2] In the printed Annual Reports of the Asylum (*e.g.*, in that for 1868), the "estimated annual value" of these allowances is set down at the very low figure of £100, 14s. 5d.

[3] In the printed Annual Reports of the Asylum, the "estimated annual value" of these allowances is placed at the high figure of £150, while residence is omitted.

[4] It is probably more now, seeing that he has since been appointed Inspector of Asylums for the colony of Victoria.

Country and Official Position.	Annual Salary.	Other Allowances.	Probable (Total Minimum) Annual Value of Office.
IV. AUSTRALIA—*continued.*	£		£
2. New South Wales, Sydney—			
1. Tarban Creek—Previous occupant,	650[1]	Apartments; £45 in lieu of fuel and light; washing,	1000
2. Parramatta—Previous occupant,	600[2]	Detached house,	700
V. CANADA:—			
Physician-Superintendents of Provincial Asylums—			
1. Toronto,	1000 (=$5000)	Apartments; board for self and family; class fees,[3]	1500
VI. UNITED STATES:—			
Physician-Superintendents of State or other Public Asylums—			
1. Bloomingdale, New York,	1000 (=$5000)[4]	Detached house; board for self and family; consultation practice; use of carriage and horses,	2200
2. Northampton, Massachusetts,	500 (=$2500)	Residence and board,	1000
3. Utica, New York,	700 (=$3500)	Furnished apartments; board for self, wife, and family,	1200

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[1] The income of the present occupant is probably considerably greater, apart from his being "Inspector of Asylums" for New South Wales, as well as Physician to the Asylum at Gladesville. In the Report of the Commissioners of Inquiry on Lunatic Asylums in New South Wales in 1855 (p. 12, quoted in Dr Manning's Report, p. 156), these gentlemen recommend that the medical head of a proposed new colonial asylum "should be provided for in all domestic particulars at the public expense, and should have an independent salary of *at least* £750 a year:" in other words, that he should have board as well as lodging, attendance, and washing—which ought to be equal to at least another £500 a year—representing *a total of* £1250.

[2] The late Dr Greenup was also Medical Adviser to Government, and perhaps had an additional income from this source, as well as from private practice.

[3] Formerly Professor of Midwifery and Diseases of Women and Children in the School of Medicine connected with the University of Toronto.

[4] Reckoning the American dollar as equivalent to 4s. English: 5 dollars = £1.

Now, it may be laid down as only a fair proposition that, in order to induce a physician of any experience and reputation at home, who has or expects good prospects there, to accept a colonial lunacy appointment, with all its drawbacks, he ought to be offered *double* the emoluments he can command in Britain. It is not enough to bear in mind the much higher price of living[1] and travel[2] in the colonies—the much greater cost of menial labour[3]—the difficulty of obtaining the luxuries, and sometimes even the ordinary comforts, of life in a young colony.[4] There is much more to be made amends for, in asking a professional cultivated man of good status at home to exile himself to the antipodes. It is, for instance, impossible to atone, to a man of high culture, by *any* salary whatever, for the loss of literary or scientific society; for want of access to books of reference—to all the advantages which our large cities offer to the educated—to the holiday fields, of the most varied and charming kind, that are presented by Switzerland, Italy, Germany, Norway, the shores of the Mediterranean—though it is not to be forgotten that New Zealand possesses some magnificent scenery and certain other natural phenomena that can rival those of Switzerland, Italy, Sicily, or Iceland.[5] In a wild country, such as New Zealand still is on the whole, the *danger of travel* is so great and so real that not only did I meet with several accidents myself that might have been serious enough—while during my stay in the colony numerous fatal accidents from shipwrecks to coachwrecks occurred; but not a few of the public men of New Zealand have died suddenly by accident, sometimes in the course of journeys necessarily undertaken in connexion with their official duties or position, while others have been disabled permanently or temporarily by non-fatal accidents. Thus the superintendent (*Anglicè* governor) of the province of Nelson—with whom I had an interview, and subsequently correspondence, relating to certain contemplated reforms in the local lunatic asylum—died by drowning on the west coast of the said province.[6] My old schoolfellow and friend,

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[1] The cost of *firewood* alone in certain colonies (*e.g.*, Canada) is a serious item of annual expenditure.

[2] In the absence of railways, travelling by *coach* frequently costs as many pounds as the same distance would cost shillings per railway at home.

[3] Where servants are to be obtained at all, they cost at least four times as much as at home.

[4] In Wellington—the parliamentary capital of New Zealand—all buildings are of wood, in consequence of its liability to earthquake shocks.

[5] For instance, the fiords of the west coast of Otago, the inland lakes of the same province, the Mount Cook region of Canterbury, the volcanic district of the North Island and of White Island, including Lake Taupo, Ruapehu, and Tangariro.

[6] *Vide* paper in the British and Foreign Medico-Chirurgical Review for October 1869, p. 481. On this subject Capt. Rough, then of Nelson, wrote me in May 1865,—"I owe you many thanks for your kind attention to my note on the subject of our lunatic asylum. The Government must now act on your suggestions regarding proper provision for attendants, or allow the poor

J. M. Balfour, C.E., of Edinburgh, and afterwards Provincial Marine Engineer of Otago, was more recently drowned in the course of one of his ordinary official visits of inspection on the east coast of that province. Dr Sinclair of Auckland, sometime Colonial Secretary, to whom I carried letters of introduction, had been drowned before my arrival in one of the Canterbury rivers, while on a botanical expedition with Dr Haast, the accomplished Government Geologist of the latter province. Again, my friend John Hislop, Esq., of Dunedin, whose name is identified with the origin and development of the admirable Education Scheme of Otago—the best that exists in New Zealand—had his leg or arm broken by the smash of a coach,—a sort of accident in which I have myself figured, though with more fortunate result.

Many of the physicians of British asylums have sundry means of adding considerably to their *official* salaries. Some of them have insane *boarders*, who do not pay less than £100—sometimes £200 or £300—a year each. Several are *lecturers* on insanity in universities or medical schools. Generally the classes are small, and the total fees—at one, two, or three guineas each student—cannot amount to an annual sum of any importance. But in other cases, where the class is, or has been, large, the income may form a respectable addendum to the physician's other emoluments. Many of them have *consultation practice in lunacy cases*—a somewhat vague and pretty extensive category, that includes numbers of mere "nervous invalids," and persons of vicious habit, or of defective mental power or application, among the higher classes. Indeed, as a general rule—whether or not it is specifically permitted by boards of directors—the British asylum physician is the natural consultant for his district, in lunacy cases; and in or near large towns a practice of this kind becomes sometimes so lucrative that it is much more valuable than the official salary. Thus, I know of one case in Scotland in which, the official salary being £500, the income from private practice was £900—making a very respectable total of £1400 a year. He would indeed be in sorry practice as a consultant in lunacy in or near such cities as the capitals of the three kingdoms—or as Manchester, Liverpool, or Glasgow—who made less than £500 a year. For visits to patients in the country, physicians engaged in lunacy practice in Edinburgh charge single fees of fifteen to thirty guineas, and I have heard of as much as £50 being paid as a single ordinary fee. All asylum physicians also draw a certain revenue from the fees of official *certificates*—such as those required in cases of curatory petitions to the Court of Session in Scotland, or for admissions into, or transmissions to, other asylums. In the large asylums, the fees from this source alone

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patients to remain exposed to the treatment of untrained and ignorant persons. Poor Mr Robinson was drowned at the west coast; and what his successor, Mr Saunders, may do in the matter, I do not know. He appears to be well disposed."

probably amount to not less than £100 a year. There are certain other kinds of certificates, which many asylum physicians grant *gratuitously*—though they are under no obligation to do so, or to grant them at all: and even at home the friends of patients, and the general public, are too often meanly ready to exact if possible, or to accept where offered, the *gratuitous* (extra-official) services of asylum physicians!

A Lunacy Commissioner in a young colony can scarcely take boarders, or deliver lectures to a class of medical students. But he is a natural and proper *consultant* in all forms of insanity and allied nervous disorders; while the peripatetic character of his official inspections—leading him periodically to visit the different provinces of such a country as New Zealand—give him an advantage that local (fixed) practitioners, even if equally eminent, cannot possess.[1] I know from experience that in this form alone—that of a consultant in insane and nervous cases throughout the colony—a properly qualified expert from home would, or at all events might, prove of inestimable value to the colonists; for I found in all parts of New Zealand extreme timidity and reluctance on the part of physicians to mix themselves up in any way with lunacy matters: the result of which was the gross mismanagement of many cases among the higher classes. The income of such an expert in such a colony might easily be at least £1000 a year. But it might not be considered, by the colonial government, proper—as apt to afford ground for future misunderstanding or complaint—to permit a Lunacy Commissioner to engage in any form of consultation practice, or to do ought else than devote his whole time to the discharge of his official duties. That is to say, Government may prohibit extra practice or service for direct money remuneration. But of this I am quite certain, from my own experience, that the colonists will take very abundant, and possibly very mean, use of his *advice gratis!*[2] Colonial governments are in the habit of buying the services of their officials at the cheapest rates, while exacting the greatest amount of service, whether paid for or not; and there is not only a danger, but a probability, that this will be the position of a Lunacy Commissioner, unless he take good care, from the first, to *define his position* both in respect of *emoluments and duties.* It is obvious that if such an official is to be prohibited from such a source of emolument and from such a sphere of usefulness as that of private consultation practice, or from any of those other means of eking out an official income which are common to the Alienists of Britain, his *official salary ought to be correspondingly greater.* Considering the amount of income from non-official sources enjoyed by many asylum physicians in Britain, and bearing in mind the rule that a colonial salary is practically equal *only to one-half* a British one, it is a very moderate computation to regard restriction from private practice in a colonial lunacy commissioner as equal to a loss to him of £1000 a year.

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[1] On this subject, the reader may consult Dr Manning's Report, p. 203.

[2] While myself travelling in New Zealand, all sorts of stratagems were resorted to for the purpose of securing my professional opinion in all manner of surgical and medical, insane and sane cases, *gratis*. Even what was virtually compulsion was sometimes used. And so far from being one penny the richer, I was forced sometimes to give advice at the cost of great fatigue and inconvenience to myself. So much for the so-called "independent" spirit of democracies

Moreover, if, as is extremely likely, a colonial lunacy commissioner is to *constitute in himself a board of lunacy*—if he is called upon to do, not only the work of a staff of inspectors, but also to discharge the functions which, in our home boards, appertain to a well-paid secretary and clerks,[1] he ought, in common fairness, to have the accumulated or conjoint emoluments of *all* these officers!

It is not enough, however, to offer a handsome official salary, which ought to commence from the date of appointment, or, at least, from that of resignation of office at home. Due provision should also be made from the first for *superannuation*. A retiring pension should not be made to depend on length of service, age, or infirmity; for an accident might occur, even on the voyage out, disabling the commissioner-elect from further, or from full future, service; and it would be obviously unjust that, in such a case, having demitted a good life appointment at home, he should have no claim on the colonial government, simply because he had not spent ten, fifteen, or twenty years in its service. The arrangement made should be of such a character as to give him the power of coming home on a comfortable superannuation allowance whenever he feels himself disabled by the strain of office, or by accident or disease contracted in the course of his official journeys. The amount and conditions of superannuation cannot altogether be determined by the superannuation arrangements of *British* lunacy authorities; for in a colony the work and responsibility will necessarily be much more severe and exhausting. The period of service should, therefore, be much shorter, the amount of pension larger, and the whole conditions more liberal. Nevertheless, British arrangements may afford a guide to the *minimum* amount and conditions; for the maximum in Britain should be a minimum in any of our colonies. Now, our Lunacy Commissioners enjoy the benefits of the civil service[2] superannuation arrangements. The last who retired after twenty years' service has a pension of £1000 a year.[1] For the superannuation of English asylum physicians, special provision is made in the lunacy statutes, the common arrangement being a grant of two-thirds or three-fourths of the total annual value of the appointment (that is, of the money-value of the allowances added to the salary) after ten to fifteen years' service.[2] Thus, of recent resignations on pension the following are illustrations:—

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[1] According to the Report of the Scottish Public Boards Inquiry Commissioners (1870), the secretary of the Scottish Lunacy Board has a salary of £600, and the chief-clerk of £300, a year.

[2] The following are illustrations taken from other departments of the civil service, according to Government blue-books (1865):—

(1.) Professor of Logic in the University of Glasgow.—Thirty-seven years' service. Annual income at time of retirement, £959, 18s.; pension, £639, 19s. per annum.

(2.) Professor of Medicine in University of St Andrews.—Thirteen years. Income, £949, 10s. 8d.; pension, £363, 19s. 9d.

(3.) Professor of Anatomy in University of Aberdeen.—Twenty-two years. Income, £625, 17s.; pension, £323, 7s. 1d.

(4.) Professor of Divinity in University of Glasgow.—Twenty-two years. Income, £674, 4s. 8d.; pension, £348, 7s. 1d.

(1.) East Riding of Yorkshire Asylum.—Pension, £575; eighteen years' service; equal to two-thirds of salary and allowances.

(2.) Somerset County Asylum.—£450, after twenty years' service.

(3.) Kent County Asylum.—£450, after seventeen years' service, being nearly two-thirds.

(4.) Derby County Asylum.—£400, after twenty-one years' service, being two-thirds of salary and value of allowances.

(5.) Gloucester County Asylum.—£350, after seventeen years' service.

(6.) Bristol (City) Asylum.—£250, after ten years' service; while Oxford gave the same sum only after twenty-three years' service.

(7.) Lancashire Asylum at Prestwich gives a pension of two-thirds after twenty years; while that of

(8.) Durham County gives the same amount after fifteen years' service.

Similar arrangements exist in the county or district asylums of Ireland and Scotland. Though there are many instances in these countries and their asylums of the superannuation of the subordinate officers on handsome allowances—sometimes on *full pay* after an unusually prolonged or efficient service[3]—there are no recent cases of the retirement on pension of the *physicians*. Several cases have lately fallen under my notice, however, of army and navy surgeons retiring on from £400 to £550 per annum after twenty to thirty years' service. The only *colonial* illustration with which I am acquainted is the case of the physician of the Yarra Bend Asylum, near Melbourne, Australia, whose pension is £600 a year after twelve years' service.[4]

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[1] It is said that both in England and Scotland the Commissioners retire on full pay after twenty years' service.

[2] The *British Medical Journal* of 29th April 1871, states that the superintendents of English asylums now retire, on three-fourths of the total annual value of their appointments, after fifteen years' service. The *Lancet*, in April 1863, stated that it was proposed to grant to poor-law medical officers pensions after ten years' service.

[3] An illustration is given in the Thirty-sixth Annual Report (1863) of the Murray Royal Institution, Perth, p. 23; and in the same Report (pp. 25–28) the whole subject of *superannuation of asylum officers* is discussed. It is also touched upon in the Thirtieth Report (1857), p. 36.

[4] Dr Stewart, of the Tarban Creek Asylum, New South Wales, was entitled to a retiring pension after ten years' service; but on what scale I am not aware.

Provision must be made, however, for more than salary and superannuation. An adequate sum must be offered for *outfit and passage*, as well as for *official apparatus;* while proper provision must not be omitted for annual *holiday* rest or relaxation. Moreover, as I have already suggested, Government should defray the cost of, and not grudge the time occupied by, a systematic inspection of the lunacy systems of the leading nations of the world. Now, in the case of the physician of the Melbourne Asylum, sent for to this country some years ago, the allowance for outfit and passage was £150 for an unmarried man, and £370 for a married couple, this being intended to cover the expense of the overland journey (*via* Egypt and Ceylon). The four professors recently appointed to the University of Otago had each £150 for outfit and passage. Each professor had, moreover, a grant of £50 for *books* in his department, to become the property of the university library; while two of them had, in addition, an allowance of £200 for class apparatus and specimens,—also, of course, to become the college property. I have already pointed out how desirable it is that a colonial lunacy commissioner should carry out with him a full assortment of books, reports, forms, plans, and drawings; but it is equally proper that he should take with him the nucleus at least of a *practical museum of asylum appliances*,[1] which should include not only all specialties in the way of windows, doors, locks, systems of heating and ventilation, but of feeding apparatus, materials of dress, room and table furnishings, and generally of all articles that conduce to efficiency of organization or treatment by economizing labour or otherwise. The collection of such articles would entail considerable time, labour, and expense; but when completed it would be of immense advantage to all the provincial asylums of such a colony as New Zealand. For the materials to furnish a *colonial lunacy library and museum*, a sum of £300 to £500 might be profitably expended. As to *holidays*, the Deputy-Commissioners of Scotland have each two months per annum; some of the asylum physicians of Scotland have six weeks, others a month; some of those of England have two months or upwards; and Sir Henry Holland tells us, in his recently-published "Recollections" (1872), how necessary he found it to take regularly, for a long series of years, at least two months' annual holiday. But whereas that learned and laborious physician spent his holiday in *travel*—and many of our asylum physicians, whose life is, in great measure, a *sedentary* one, do the same—Commissioners in Lunacy, both at home and abroad, whose time is chiefly occupied "on circuit," in a tour of inspection of asylums or of the insane scattered in private dwellings, find their holiday in simple rest at home with their families. Neither our busy city physicians, our lunacy commissioners, nor our asylum physicians require more obviously their annual holiday than the hard-worked officials of a colonial government. It is surely unnecessary to add, that the *travelling expenses* of a lunacy commissioner while on official business must be defrayed by the colony. Whether this should be by a fixed allowance per day, as is the case in the three kingdoms, or simply by reimbursement of actual outlay, may be a matter for arrangement between the colonial government and its commissioner. Probably in our colonies, as at home, the principle of the former arrangement is to be preferred, though the amount must be much higher in a new than in an old country, where travelling by coach, for instance, costs sometimes pounds instead of shillings, while hotel charges are correspondingly exorbitant.

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[1] Such a *museum* ought to be attached to each Board of Lunacy in the three kingdoms, if it is part, as it surely ought to be, of their object to assist the authorities of the numerous local asylums, or the custodiers of the insane in private dwellings, in their constantly-recurring difficulties—in the management, for instance, of the suicidal, abstinent, destructive, paralytic, or dirty.

Occasionally subordinate asylum officers are sent for from this country, or they emigrate, seek office in colonial asylums, and by reason of their experience meet with prompt appointment at salaries usually about four times what they obtained at home.[1] Thus, the last appointed physician of the Melbourne Asylum had authority to send out two male attendants at £120 per annum, with board, lodging, and the other allowances such officers usually enjoy in British asylums. The average home wages of such officers are £25 to £30. In 1863, several former attendants, trained by myself in the Perth Royal Asylum, sought and easily obtained appointments in the new Dunedin Asylum, where the males got £100 and the females £50 a year of salary, whereas at home their wages had been £25 and £10 respectively. If the increased emoluments of physicians of colonial asylums were to bear a corresponding proportion to their home salaries, they ought to range from £2000 to £3000 a year! Nor is there any reason why the proportion between the wages of an attendant and the salary of a physician that exists in the asylums of the home country, should not be maintained in a British colony. More especially is it absurd and unjust to offer four or five times the home wage to an illiterate attendant, and less than an average home salary to a highly-educated physician! Taking a second or third rate asylum-physicianship in Britain as worth only £500 a year,[2] and assuming (1) that the occupant of such an office, were he to accept a colonial appointment, should be paid at the same increased rate as his attendants emigrating to fill subordinate posts in the same colonial asylum, and that (2) a lunacy commissioner should receive twice as much pay as an ordinary asylum physician,—the emoluments of a New Zealand Lunacy Commissioner should include a salary of £4000 a year, with a retiring pension of £1000 to £3000 per annum, according to the length or value of service. How far the New Zealand Government will approach *this* equitable standard remains to be seen!

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[1] The same holds good (*e.g.*) of governesses in Victoria, New South Wales, and New Zealand. In the celebrated inquest on Miss Mary Loftus, recorded in the *Sydney Morning Herald* of 14th December 1861, it came out in evidence that her salary as a governess had been £200 a year, or probably four times what her services would have commanded at home. The result was, that she had been enabled to accumulate a little fortune.

[2] There are cases in which the *assistant* medical officers of public or private asylums in Britain and other countries hold a position of this value. Thus—

(1.) In the New York State Asylum at Utica, there are three medical assistants, of whom the first has a salary of £300 ($1500), with furnished apartments and board for himself and family; the second (who is unmarried) has £250 of salary with board and lodging; and the third, £200, with furnished lodging, and board for self and family.

(2.) In the Royal Hospital of Bethlem, London, the medical assistant has £300, with board and lodging.

(3.) In certain private asylums in or near London, the assistant-physician has £200 to £300 a year, with board and lodging of the best kind.

(*To be continued.*)

ARTICLE V.—*Notes of Successful Operations on Aged Patients.* By THOMAS ANNANDALE, F.R.S.E., Surgeon to the Royal Infirmary and Lecturer on Clinical Surgery.

A BRIEF note of the following cases, which have occurred in my hospital and private practice during the last few years, will, I trust, not be thought uninteresting.

The results obtained in these cases prove that mere age is not necessarily a reason for withholding operative treatment, of even a severe nature, in old persons.

These results are also an encouragement to undertake operations in this class of patients, provided the patient is in fair general health, and the operation likely to prolong life, or relieve a condition which is causing suffering.

A hereditary history of long life is, I think, a further encouragement in determining the justifiability of operative treatment in aged patients.

In the first, second, seventh, eighth, and ninth of the cases, the wounds were dressed carefully according to Mr Lister's antiseptic method, and healed without local or constitutional irritation. In the third case pure sulphurous acid was applied to the wound after the operation, and during its healing, the progress of which was most satisfactory.

1. *Amputation of Arm.*—Margaret A., æt. 74, admitted into the Infirmary on the 20th of December 1871, on account of a large cartilaginous tumour growing from the bones of the forearm. Amputation through the condyles of the humerus. Dismissed cured on the 2d of February 1872.

2. *Primary Excision of Elbow-Joint.*—Mrs Y., æt. 74, having fallen in the street on the 2d of September 1871, was found to have received a compound comminuted fracture of the lower end of the humerus. The condyles of this bone were split into five portions, and the upper fragment projected for nearly two inches through the skin at the posterior aspect of the joint. Primary excision of the joint by one long posterior incision. Complete and satisfactory recovery, with a useful arm, at the end of three months.

3. *Excision of half the Tongue.*—Mrs B., æt. 71, seen on the 29th of April 1871 with Dr Dewar of Kirkcaldy. The patient was suffering from epithelial cancer, confined to the right side of the tongue. The symphysis of the lower jaw having been divided according to the method of the late Mr Syme, the tongue was split in the middle line from the hyoid bone to its tip, and the diseased half completely cut away. An excellent recovery was the result, and the patient up to this date (8th Feb. 1872) remains well, and free from any return of the disease.

4. *Removal of large portion of Cheek.*—A. P., æt. 72, admitted into the Infirmary on the 17th November 1869, suffering from epithelial cancer affecting the cheek, upper lip, and portion of one side of the nose. The entire diseased parts were removed, and a plastic operation performed to cover the large gap which remained. This patient made a good recovery.

5. *Excision of the Upper Jaw.*—Mr C., æt. 70, seen with Dr Tait of Dunse, and Dr Brown of Coldstream. A medullary tumour, the size of a closed large fist, grew from the right upper jaw-bone. The skin over the tumour was involved, but the growth did not pass beyond this bone. The affected skin and entire right upper jaw-bone were removed together with the tumour. The patient recovered well from the operation, but the disease afterwards returned and caused his death.

6. *Excision of portion of Lower Jaw, and Submaxillary Gland.*—G. U., æt. 74, admitted into the Infirmary on the 27th December 1871, suffering from a large cancerous mass affecting the skin on one side of the neck, nearly one half of the lower jaw and its periosteum, and the right submaxillary gland. There was a deep ulceration of the soft textures over the submaxillary gland, from which a serious hæmorrhage had taken place a few days before admission. The disease was removed by cutting out the affected portion of the jaw-bone, together with the ulcerated and diseased skin, and then dissecting away the submaxillary gland and muscles on one side of the tongue. The common carotid artery was exposed, and a temporary ligature placed round it as a precaution against hæmorrhage, before the deeper dissection was commenced. The operation was followed by the most satisfactory results, the large wound gradually contracted, and he was dismissed on the 8th of February 1872, in excellent health. A small opening communicating with the cavity of the mouth remained, but its margins were healed and in a sound condition.

7. *Excision of the Breast.*—M. L., æt. 70, admitted in February 1870 with a scirrhous tumour affecting her right breast. The entire breast and some glands in the axilla were removed, and a good recovery from the operation was the result.[1]

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[1] In connexion with this case, I may mention that I attended with the late Mr Syme a lady, æt. 81, whose entire breast he removed for cystic disease. This patient, and another lady æt. 70, whose breast Mr Syme also removed for scirrhus, recovered well from the operation.

8. *Removal of a Fatty Tumour.*—U. S., æt. 73, admitted in April 1870. He suffered from a fatty tumour the size of a saucer, situated under the skin over the back of his neck. As the tumour was becoming very troublesome and increasing in size, he was anxious to have it removed. This was done, and the patient made an excellent recovery.

9. *Removal of large Fatty Tumour.*—Mrs A., æt. 71, admitted 28th August 1871, suffering from a fatty tumour, the size of a child's head, situated on the inner aspect of the thigh. The skin over the tumour had ulcerated and caused a painful and troublesome condition of the growth. The tumour was cut out, and the patient recovered well from the operation, being dismissed on the 20th of September 1871.

In addition to these cases, I might add several successful operations for strangulated hernia in old people, one of the patients being seventy-eight years old, and one successful case of lateral lithotomy in a gentleman aged seventy-four; but these latter results are not so very uncommon in surgical practice.

Part Second.

REVIEWS.

Clinical Lectures on the Diseases of Women. By Sir JAMES Y. SIMPSON, Bart. Edited by A. R. SIMPSON, M.D., etc. Edinburgh: Adam and Charles Black: 1872.

WE have now before us the third and last volume of Sir James Simpson's collected writings, and it is a large, handsome, interesting book. The first volume contains the most important contributions to science which Simpson made. They were mostly published while he was yet young. The second volume has interest chiefly on literary and historical grounds, and has very little in it that can be called contribution to science. It is occupied with the history of the American discovery of anæsthesia and of his own promulgation of chloroform as an anæsthetic agent, and laboured defences of his claims as a discoverer. It contains the foundation of his wide fame. The third volume contains his own statement of his views as to gynækological theory and practice. It is well known that Simpson had an unrivalled reputation as a physician and surgeon in the diseases of women. Crowds of women came to him seeking advice; and we find in this volume an account of much of his therapeutical proceedings for their relief. So great was his renown in this department that we are compelled to enter, at once, a caveat against allowing it to influence judgment on his writings and proceedings. Renown and crowds of patients only imply the faith of the patients in the power of the physician; they imply only reputation and notoriety. It is common to suppose that reputation of this kind cannot be produced without a good substantial basis; but this natural supposition is a gross mistake. No man ever fostered the growth of his reputation more than Sir James Simpson, and he reaped the natural fruits of his care and zeal. We speak now without any special reference to the author and practitioner under review, and assert the well-known fact, that the widest and, in some senses, largest reputation may be based on nothing good or substantial; and we draw, as critics, the conclusion that renown, reputation, and crowds of clients give only a very slight and frail presumption in favour of real success in treating and curing, while they unmistakably show the presence of cleverness, worldly wisdom, ingenuity, and power to please and satisfy.

Simpson attracted universal attention to his plans of diagnosis and treatment. In diagnosis he did excellent service by showing the applications and value of the uterine probe. While this was his chief it was not his only contribution to this department; but we pass on to consider his practice. Before doing so, we must candidly tell our readers that we do not expect to find much of advancement of practice in any man's work. He who knows medicine or looks over its history will find how little any one has ever done in this department. Proposals are abundant; methods of cure are easily described and affixed to the descriptions of disease; but time generally either reduces them simply to nothing or shows that they are injurious. We have not space to enter on the philosophy of this grand subject—a philosophy so discouraging to our great therapeutical discoverers who rapidly cover and again cover the pages of the *Lancet* or the *Practitioner* with fancied new and beneficent treatments and cures. Besides the tremendous difficulties in the proper potential science of therapeutics, there is one great preliminary difficulty which it will probably take ages to overcome—our ignorance of the nature, and then our imperfection in the diagnosis, of disease. Simpson was true to himself, but very far wrong in his fundamental notions on this subject. His erroneous philosophy is probably the best excuse for his persistent introduction of wonderful new cures—his polypharmacy. His patients were only a short time under his care when they had surgical and medicinal treatment of great variety, sheaves of prescriptions delightful to credulous patients and to druggists. Leptandrin, furfurin, salts of nickel,—what not? It has been said of many such remedies that nothing is known of them but the names; we might go farther, and say that not even the names are known. Yet they cured and cure apparently just as well as other things.

Simpson's remarkable statement is this:—"Ask the medical practitioner what the nature of the difficulties is which he most frequently encounters in practice. If he will properly analyze the subject, he will confess to you that his difficulties most usually consist in exactly determining what the special disease, or diseased action, in his patient may be—not in determining what he should employ for its cure, provided he were once perfectly certain of its precise nature and precise seat and extent. The real difficulties of the practitioner do not commonly consist of doubts about the nature and details of the therapeutic measures which he ought to use; but they consist of primary doubts and uncertainties as to what the diseased action is against which he is to turn his diversified therapeutic resources. They are doubts not about therapeutics, but about diagnosis."—(P. 3.)

Just so!! For a threatened abortion, give furfurin; for a cancer, burn with sulphate of zinc; for a headache, give sulphate of nickel; for anæmia, give manganese; to remove adhesions, give a local mercurialization; to cure a fibroid, give bromine; to cure sterility, split the cervix uteri; to cure phthisis pulmonalis, give oily inhalations; to cure coccodynia, operate, and never mind though a bit of the knife is broken off and remains in the bone; try to remove a hæmatocele by the local use of mercury or iodide of lead, etc. (No doubt the etc. is as effectual as the mercury or iodide of lead.) Here is the grand medicine of the nineteenth century. If we know the disease or diseased action, we have no difficulty in finding the remedy. Would that this were other than really an egregious unintentional hoax on medicine! Would that therapeutics were waiting for advance of diagnosis! It is too true that diagnostic science is far from being far advanced; but truly therapeutics are as yet at an infinite distance behind it. We are not now speaking of that great department of medicine, the homely empirical therapeutics, founded not on science, but on public and professional confidence and knowledge of human nature, which demands the highest wisdom in the practitioner, and which, if it is not to degenerate into quackery, requires truth in the inward and outward parts.

There is a sense, however, in which Simpson's statement is true; but it is not the sense which he meant his words to convey, and it is a sense which only plunges medicine in deeper disgrace (not dishonour) than the intended one. This sense may be given in a kind of paraphrase of Simpson's words. Practitioners generally are educated well enough to know the difficulties of diagnosis; they know that a good physician has a considerable power in this way, and they are conscientious enough to feel the want of it, or to doubt their own power. But when they have made up their minds as to the nature of the disease, then their ignorance or bad education comes fully into play; they have no difficulty in prescribing; they ply their leptandrin or furfurin, or nickel or mercury, without fear or scruple. Poor and honest fellows! Ignorance is the mother of superstition. Their remedies do as well as any charm or incantation, or as an "Ave Maria, ora pro nobis,"—and that is truly doing a great deal, doing a good deed. The medicine-man of Central

Africa is a conscientious creature, just as he is in Scotland. He has no doubts about his diversified therapeutic resources. Patients in Central Africa pay their fees and swallow their drugs just as in Scotland. Such is polypharmacy as it still exists in Great Britain, and is expounded in the end of the nineteenth century by great teachers. Such is the real basis of the success of homœopathy, hydropathy, allopathy, and of every pathy;—want of science, want of scientific appreciation, credulity, want of feeling of the want of science and of scientific method, want of respect for the laws of nature; medical superstition, the same in Great Britain as in Central Africa, and equally useful in both places, but more excusable in the latter.

Simpson has in this volume a great deal of matter, chiefly of curious historical interest, on the subject of cancer. Any one who knew the man would expect that cancer cures would be some time or other a subject of his study. As might have been expected, it has come to nothing. The chapters which he devotes to the matter are worthy of perusal as a contribution to an important part of the history of medicine, and one which does not do the profession much credit.

Fibrous tumours of the uterus, a grand gynækological topic, he discusses very fully, yet far from completely. He had an overweening faith in treatment by medicines and otherwise in this disease; and he was very unsuccessful in operating for the removal of such growths. So much was this the case that he latterly discountenanced surgical interference. It is well known that in the meantime our only rational hope of removal of these tumours is by surgery, and that recently much success has been obtained in this way, both in this country and on the continents of Europe and America.

In his lectures, as originally published in the *Medical Times and Gazette*, he has no recognition of pelvic peritonitis, now called perimetritis, but dwells at length on pelvic cellulitis, now called parametritis. But it is evident that under the influence of his assistant Dr Lauchlan Aitken, and of a book which he does not name, but which is easily recognised by his description of it as "a monograph only recently published," he had greatly changed his mind on the subject of perimetritis and parametritis. He takes laboured exception to these new names given by Virchow, but this is now of no avail, for the names are meantime adopted, as any one who knows the modern literature of the subject can testify. The names, however, are matters of small importance, and not worthy of long discussion. The new chapter which he now gives on perimetritis fits badly with his old account of pelvic cellulitis. He ought either to have completely studied the subject anew and written the lectures over again, or have adopted far more extensively than he has done the views propounded in "a monograph only recently published," and which his assistant Dr Lauchlan Aitken could have expounded, modified, or corrected. This gentleman is well known to our readers as the contributor of several articles in our pages, and his works would be more highly appreciated were it more generally known that his views as published were far from being in accordance with those of his not particularly tolerant master.

Our author very early took great interest in ovariotomy, encouraged Clay, foresaw the future of this great operation, and defended it against unjust attacks then made on it from every side. His arguments were not always well laid, and sometimes his figures were quite unreliable, but he was energetic, skilful, and did good; making one of the early applications of statistics to the solution of practical questions. He operated frequently, and employed several of his young friends to operate for him. But he was not successful, and he declined, no doubt for reasons not far to find, yet surely insufficient in a man who got so much statistical aid from others, to give for publication the number of his cases and the mortality.

Dysmenorrhœa and sterility are two subjects whose treatment occupied Simpson very much, and no two diseases brought him more fame or patients. They are great subjects, and are worthy to occupy the attention of the greatest man. Simpson has merit in directing his powers to the solution of the difficult problems involved in the treatment of these diseases, and in some senses he cannot but have done much good. Yet we must add, that we have read his account of dysmenorrhœa with astonishment. To find him attributing the disease, for whose cure he applied a modified lithotome caché, to contraction of the external os uteri, creates for us a puzzle. There is no doubt it is an error, but this is not the place to discuss this point. There is no doubt that dilatation of it does not require a metrotome, and that it is not dangerous to life or to the health of the parts. Accordingly, our author writes that he believes he is entitled to say that there are few operations in surgery so perfectly simple in their performance, and so extremely satisfactory in their results, as division of the cervix uteri in cases of obstruction, dysmenorrhœa, and sterility!! Yet we are very far mistaken if it is not notorious that the operation has gone greatly out of fashion, that it is falling into comparative desuetude, and that it has been the cause of death and other disasters in very many cases. Simpson's own editor and assistant corroborates this. There is indeed room to question whether the operation has not caused much more disease and sterility than it has cured.

One of the chief diseases closely connected with the name of Simpson is retroversion of the womb or the minor displacements generally. At one time, it quite took the wind out of the sails of ulceration of the womb; it was the secret of the minor uterine ailments; its cure was to be effected by an intrauterine pessary. This theory of the minor uterine ailments is well known to be now in a very shaky condition. Scarcely any one adheres to it. The treatment by intrauterine pessary is well known to be an exploded heresy, and to have been long almost, if not altogether, disused by Simpson himself. Winckel, Martin, Beatty, and some others, are still a forlorn hope struggling for its partial defence; but the attempt is futile. In spite of all this, which is well known, the original paper on this subject, by Simpson, in the *Dublin Medical Journal*, is here virtually reprinted with scarcely a note or comment! and the book is intended for the guidance of practitioners! Nothing is said of the fatal and other injurious consequences of a plan of treatment the description of which remains much as originally proposed, although it was subsequently given up by the proposer himself.

We must stop somewhere in this line of criticism, though we have plenty of materials for continuing it, lest we weary our readers by its undue extension; yet it is natural for a reviewer passing over the work of a great author to seize its salient points, and especially those which offer prominent obstacles to complacently smooth reading. The student will find much interesting matter in this volume of a more commonplace kind than what has excited our remarks; much, indeed, in a tame old-fashioned style, which we scarcely recognise as the work of this impetuous author. This kind of work is all of recent date.

The three volumes of Simpson's works which we have reviewed, constitute an admirable picture of the man, of his style of thinking, practising, and writing. They are the works of one who attracted as much notice and excited as much attention as any of his contemporaries. They ought to be in every medical library.

The West Riding Lunatic Asylum Medical Reports. Edited by J. CRICHTON BROWNE, M.D., F.R.S.E. London: 1871.

An Analysis of Post-mortem Appearances in 235 *Insane Persons.* By JAMES C. HOWDEN, M.D. Edin., Medical Superintendent of the Montrose Lunatic Asylum.

THE West Riding Reports are a collection of thirteen essays on subjects connected with insanity. They are, of course, of unequal moment and of unequal merit; but, taken all in all, contain a good deal of interesting matter, the result of keen observation and painstaking research, discussed in a scientific spirit.

The first paper is on Cranial Injuries and Mental Diseases, by Dr J. Crichton Browne. It might fairly be conjectured that a knowledge of the physiology of the brain would be extremely useful in the prognosis of cerebral injuries, or that the careful observation of such injuries would tend to throw great light upon the physiology of the brain; but when we come to compare and try to group these cases, we find the results so variable and contradictory, that there is no gainsaying Dr Browne's observation, that "the subject is still involved in doubt and confusion."

We regard it as a perfectly open question whether the cerebrum is an organ with a common function, like the kidneys, or whether different functions or different kinds of mental work ought to be assigned to its different morphological parts. Dr Howden, in his analysis of the post-mortem appearances in 235 insane persons, writes—"In referring to the summary, I shall not pretend to prove any connexion between the lesion and the mental symptoms during life." But, then, what is the use of men taking toil and trouble to slice up brains by hundreds if no connexion can be established between the symptoms during life and the appearances after death? Dr Howden, of course, knows this very well; but his experience has as yet afforded him no certain guide to help him in connecting the one series of observations with the other.

Dr Browne sets himself to show how cranial injuries often are the cause of mental disorders; but, then, he has to admit the existence of a factor of very variable power in what we call hereditary or constitutional predisposition. This predisposition he holds is much greater in civilized than in barbarous peoples. Some savages in South America flatten the heads of their children in a monstrous manner by artificial pressure; but this, we are told, has no perceptible effect in diminishing the intellect of those who survive it. Then, again, Dr Browne cites authorities to prove that insanity is almost unknown among some tribes of the American Indians. Yet we may safely assume that cranial injuries are not uncommon among those savages; and thus, if the facts are correct, the greater predisposition of civilized man to become insane under injury to the nervous centres must be held to be proved. Dr Browne thinks that the greater size of the head of the male infant renders him more liable to injuries at birth than the female infant. "The diseases of the nervous system," observes Dr Farr, in the Registrar-General's Second Annual Report, "are twenty-three per cent. more fatal to males than to females, the chief difference arising from the diseases which affect children."

"Sir James Simpson," Dr Browne observes, "did not trace the pernicious effect of the greater compression of the male head at birth for more than a short period thereafter; but arguments might be adduced to prove that they may really extend over the whole of life, and either directly or through the instrumentality of convulsions, or some other intermediate disorder, eventuate in no immaterial propagation of mental aberration." Of course, Sir James Simpson would never have denied the *possibility* of such distant effects. As a general rule, we are disposed to think that if the child escapes in infancy, there is not sufficient proof that it is in much danger of suffering in later life.

We wish Dr Browne had attended more carefully to the relation between the head of the child and the size of the pelvis of the mother. He quotes the well-known observations of Broca and others to prove that the cranial capacity of some nations has increased since the Middle Ages. It would, however, not be easy to prove that women nowadays run more danger in childbirth. The mean internal capacity of the skull in Europeans is 92·3 cubic inches, in Asiatics 87·1; yet childbirth is often very difficult with Asiatics, at least in India, and insanity is not unfrequent. Dr E. Weber has advanced facts to show that there is a relation between the shape of the head in different races and the shape of the pelvis; and it is not safe to assume, as Dr Browne appears to do, that while the size of the head has increased with civilisation, that of the pelvis has remained the same.

Dr Browne gives a number of interesting examples of the bad effects of slight concussions and oscillations of the brain in producing insanity in those already predisposed to it. His essay is well written, and if some of his conclusions appear open to question, this may be set down to the extreme intricacy of the subject.

There is a good paper on the Ophthalmoscope in Mental and Cerebral Diseases, by Mr Charles Aldridge, L.R.C.P. The following quotation will indicate the interesting nature of his observations (p. 89):—" Schroeder van der Kolk has shown that in all (?) epileptics there is a dilated condition of the capillary bloodvessels and secondary granular" (and fatty) " degeneration of the medulla oblongata. This dilatation he regards as the proximate result of the fits, and not as their cause. He also states that with these changes vascular dilatation of the brain, and particularly in the cortical substance, goes hand in hand. The small ganglionic cells become compressed by the dilated vessels, and perhaps also in consequence of the more albuminous nature of the intercellular fluid. Dulness and loss of memory are the results; or if, after a fit, an unusual current of arterial blood is supplied, we have following immediately upon the paroxysm, over-irritation, rage, and acute mania, which is present in so many epileptics. How well does all this chime in with the conditions found in the retinal circulation both during the paroxysmal and the interparoxysmal periods! The general condition of the retinal circulation, as has been shown, being one of passive hyperæmia, there is accompanying this, and in relation with it, a state of dementia; the dementia being most profound where the dilatation of the veins is the greatest. Again, the remark as to the mania or excitement following immediately after the fit in many cases being due 'to an unusual current of arterial blood' supplied to the brain, brought to my mind—for I had not seen Van der Kolk's book until my observations were completed—the case of M. H., No. 4, the details of which have been given above. I there noted that during the stage of excitement immediately following the epileptic fit there was increased vascularity of the disc, and that the arteries had become larger; and I remarked upon the fact of this sudden restoration of the circulation being accompanied by excitement."

Dr Howden, in his pamphlet, observes—"Very marked injection of the membranes is often met with in patients maniacal, in the recent stages of general paresis, or after severe epileptic convulsions." "Hæmorrhagic effusions in the pia mater are not unfrequent in epileptics; those I have met with are of old standing, and had assumed the character of rusty gelatinous deposits."

A noticeable feature about most of these reports is the hopeful view which is taken of therapeutic agents in insanity. In the observations on the physical action of nitrous oxide, it is thought that this gas "may be with advantage employed in certain forms of mental disease;" and Mr George Thompson, L.R.C.P. London, remarks that the Calabar bean has been extensively used in the treatment of general paralysis in the West Riding Asylum, and that in every case its employment has been attended with marked benefit. Mr E. Churchill Fox, in a short paper on the Use of Ergot of Rye in the Treatment of Mental Diseases, remarks:—"I have seen it secure rapid recovery from that singular and obscure condition, the status epilepticus." He is inclined to think that with bromide of potassium the fits are reduced in number and severity, but the paroxysms of mental disturbance are intensified and prolonged. The conclusion which Mr Thompson arrives at, in his article on the "Sphygmograph in Lunatic Asylum Practice," may perhaps be questioned by those who are prepared to thank him for his observations. "General paralysis of the insane," he writes, "is a disease which may be presumed to be owing to a considerable extent to persistent spasm of the vessels, which leads to change in their component elements, but more especially in the muscular substance. This persistent spasm, by reducing the amount of blood which can pass through the vessels to the parts to be nourished, prevents renewal of these parts, and, consequently, [causes?] wasting. The most rational treatment indicated is to relieve this spasm." *Solus spasmus et simplex atonia*—there is nothing like the sphygmograph for clearing up difficult points in pathology.

In an article on "Phthisis and Insanity," Dr Clouston's views, that tuberculosis is a frequent cause of insanity, are ably criticised, and the statistics on which he relied opposed by other statistics. Certainly it would be difficult to convince one who has observed a large number of cases of phthisis, as they occur in ordinary practice, that this disease has any special connexion with insanity. A man labouring under consumption has some reason to feel unquiet in mind, and it often brings with it poverty and many other evils known to be exciting causes of insanity; yet, take it all in all, we suspect that phthisical patients are not more apt to become insane than might be expected from their proportion to the general population, and that the depressing influences of melancholy, exhaustion, or confinement are the real causes of the frequency of consumption in asylums.

On the Treatment of Fractures of the Limbs. By SAMPSON GAMGEE, Fellow of the Royal Society of Edinburgh; Surgeon to the Queen's Hospital, Birmingham. London: J. and A. Churchill: 1871.

THIS is, in many respects, a remarkable book. The author's name guarantees its cleverness, and assures us that we shall find in it strong individuality and originality of thought, expressed in bold but distinct language, unfettered by any trammels of reverence for tradition or false modesty.

The arrangement of the work, as the author himself points out, is fragmentary and irregular; there are many repetitions and redundancies, and the facts and deductions from them are not well systematized. We think the work would have been more effective had it been arranged as a treatise, and very much abridged.

The aim of the work is to introduce a very great and radical change in the principles guiding treatment of fractures of the limbs, which he believes, in this country, are usually treated on a wrong principle. Mr Gamgee enunciates three chief rules:—1. That the fracture should be *instantly* reduced; 2. That the limb should be subjected to instant and thorough *circular compression;* 3. That the fracture should be thoroughly, not partially, *immobilized.*

As to the first of these principles, he will find no surgical authority of any eminence to dispute the point. As to the third, we are all *theoretically* at one; but we quite agree with Mr Gamgee that, practically, many surgeons are most unsuccessful in obtaining—most are most careless in attempting—really to immobilize a fracture. We most thoroughly agree in every word he says as to the unsatisfactory nature of the retentive power of a Macintyre splint, and of most of the usual bandages and splints for broken humerus or broken femur. All his observations on these two heads are most admirable and sensible. In Syme's words—"the great requisites for treating fractures successfully are coaptation and immobility."

As we find that, as to two-thirds of his principles of treatment, Mr Gamgee is really at one with the great bulk of surgical authority, we with some difficulty understand the numerous allusions in various parts of the work to the radical differences between his method and that of his teachers and contemporaries, as these differences are really reduced to very narrow compass. He tells us—"I have been in the habit of treating the subject somewhat dogmatically, strong in the correctness of the principles to which I adhere, as opposed to those held by the vast majority of surgeons."—P. 5. "The numerous splints and contrivances recommended for different fractures of the upper and lower extremity are evidence of an imperfect understanding of the subject, and must eventually give way before a philosophical appreciation of its fundamental principles, and a correct estimate of their practical application."—P. 70. "The yoke of authority in science is so enslaving and so fatally inimical to progress, that on no condition could I myself support it, or counsel its being borne, however eminent might be the intellect which sought to impose it."—P. 144. Surely such a principle ought to prevent Mr Gamgee from promulgating, on his own *authority*, his new doctrines. Surely, if carried out to the full, we ought all to begin *de novo*, as if nothing had been written, nothing sifted by long labour and experience—as if, indeed, no science of medicine existed at all. Again, is there not a *naïveté* almost approaching innocence in this remark?—"It is curious how some of the best authorities, old and recent, agree in condemning what is right."—Footnote to p. 146. A most enviable frame this, that is so certain as to what *is right* in spite of the best authorities.

Let us now see what this second proposition really means that is so much against the best authorities. It is the principle of circular compression, which, at page 83, is described as "The gentle and perfectly uniform, the evenly distributed, and in no way constricting action, which I understand by compression as applied in the treatment of fractures, is a therapeutic agent than which I know none more demonstrably beneficial." We agree with every word of this. It is an admirable description of what a well-applied bandage and splint ought to be. Mr Gamgee differs from many surgeons in the boldness with which he applies them at once, while most surgeons wait for a day or two, or even more. We believe that, in principle, he is right, and those who wait are wrong; but in practice, and in the hands of the great majority of ordinary surgeons, we believe that Mr Gamgee's plan would be dangerous, and the ordinary one more safe. With skill and care—with the practice which none but hospital surgeons can acquire—and, still more important, with a house-surgeon constantly at hand—we believe Mr Gamgee's plan of immediate compression to be simple, pleasant, safe, and effectual; but, in the hands of the great majority of surgeons, and still more, in cases treated at their houses, and seen perhaps once a day or once in two days, Mr Gamgee's plan has risks both to limb and life.

He supports his arguments by the recital of some most excellent cases, the headings of one or two of which we quote to show their nature. "CASE 12. Fracture of both bones of the leg, with eversion, great swelling, and blebs. Application of starched apparatus. Rapid subsidence of swelling. Patient able to lift leg the fourth day; out of bed the ninth. Uninterrupted recovery. CASE 14. Compound and comminuted fracture of the leg from direct violence; great shortening—violent spasm. Immediate application of starched apparatus; able to get up on the eleventh day. Perfect union without any shortening, and very slight thickening."

A well-written, but rather exaggerated, contrast is drawn in the sixth lecture between a case treated by leeches, fomentations, and utterly inefficient splints, and another treated on his own plan, much to the advantage of the latter. It also includes a very interesting note on Vanzetti's treatment of inflammation by digital compression.

The remainder of the book contains practical directions as to the making and applying his splints, which any who intends to practise his method would do well to peruse.

A most ingenious pillow, devised by the author, on the basis of an idea of Mr John Grantham's, is thus described:—"My fracture pillow is of indiarubber, and is divided longitudinally into three compartments, of which the middle one is filled with water, and the two lateral ones with fine sand. A strip of thin board, with straps under the water compartment, admits of the lateral sand partitions being brought close round the limb, and the whole being suspended to an ordinary swing cradle. The elasticity of the central water compartment is a source of great comfort, and the long lateral sand-bags give very efficient support."

In conclusion, we would advise all surgeons to read this suggestive and interesting work, though we believe that the enthusiasm of a partisan may have to be toned down by the results of experience.

On the Treatment of Hyperpyrexia, as illustrated in Acute Articular Rheumatism, by means of the External Application of Cold. By WILSON FOX, M.D., F.R.C.P., etc. London and New York: M'Millan and Co.: 1871. Pp. 78.

IT seems to be an unfailing consequence of all advances in physical diagnosis, that they lead primarily to an over-valuation, from a therapeutic point of view, of the means by which they are attained; so it was with the stethoscope in times not long past, and so it seems now likely to be with the thermometer. The revelations of the stethoscope led to the assumption that the essential part of the disease consisted in the physical alteration of the parts affected; and the therapeutic abuse to which this gave rise, was the extension of a treatment adapted for certain well-known symptoms to all cases presenting the physical signs usually associated with such symptoms, quite apart from the actual presence of these symptoms. The result of this, as might easily have been foreseen, was a questioning of the utility of the therapeutic means employed, and an ultimate discarding of them—perhaps too completely. The revived use of the thermometer in disease seems likely to lead to somewhat similar results—an over-valuation of mere temperature as a therapeutic indication, and possibly an ultimate discarding of useful remedies, because pushed to extremes by over-zealous advocates.

We freely acknowledge the great advantage to diagnosis, prognosis, and therapeutics which result from a judicious use of the thermometer, and a rational estimate of its indications as one of a series of valuable symptoms, but we demur to the tendency of the present age to regard temperature *per se* as the most important object of treatment, to the means most commonly advocated for this treatment, and to the reasoning adduced in support of the success of this treatment.

There is no doubt a degree of temperature necessarily fatal under all circumstances, just as there is an amount of consolidation of the lung also fatal under all circumstances; but just as we have lower degrees of consolidation proving fatal under certain circumstances, so we have also lower degrees of temperature which prove fatal—or at least accompany mortality—in certain conditions. But there is no reason to conclude that in these lower degrees it is the temperature *per se* which is fatal; it is only one of many phenomena which constitute the disease; it is really only a symptom—nay, only a consequence—of those phenomena which produce the fatal ending, and which may go on increasing, as in cholera, after that result has been attained. It is obvious that death, occurring with a temperature short of one absolutely and necessarily fatal, is not the result of the temperature *per se*, but depends upon other concomitant circumstances, the influences and effects of which must be duly considered in regard to the treatment to be employed with most hope of success; and it is also obvious that, under these circumstances, any treatment solely directed towards a reduction of temperature proceeds upon limited and imperfect views of the nature of disease, and if successful is only so because it has not interfered injuriously with the natural tendency to recovery. Now, if Dr Fox has found (p. 27) that the temperature of 106°, and Dr Murchison that of 106°·5, is uniformly fatal in rheumatism, while other observers have seen recoveries in other diseases, such as sunstroke, relapsing or scarlet fevers, subsequent to a much higher corporeal temperature—say 108° or 109°—it is self-evident that temperature in itself has not been the cause of death in these cases of rheumatism, and that treatment directed solely to the diminution of temperature has not proved successful because of its paramount utility, but only because, while possibly aiding in recovery, it certainly opposed no obstacle to that desired end. But even supposing the reduction of the corporeal temperature to be a paramount therapeutic necessity, it is surely a most unscientific procedure to treat the living body as we would a hot poker, and simply plunge it into cold water. We state only well-known physiological facts when we say that exposure to a minor degree of cold induces reaction and increased heat in the living body, while exposure to a severer degree of cold, if not followed by reaction, is uniformly fatal; and if this be the case in health, how much more likely is it to be the case in disease, when general vitality, as comprised in nervous reaction, is not inconsiderably lowered. Indeed, even in sunstroke, which is accepted by Dr Fox as the analogue of hyperpyrexia from internal causes, it is not so much the direct cooling of the douche that is of importance, as the reaction consequent on its use; for if the skin refuse to act after the douche, the high temperature is maintained and the patient's danger persists. But if the skin acts or perspires, it certainly does not do so simply because it is cooled down, but because, by intermittent douching with cold water, nervous reaction is roused, and surface circulation and secretion restored. In *asphyxia neonatorum*, which is somewhat analogous, pathologically, inasmuch as it consists in pulmonary congestion with nervous depression, but where there is no excess of heat internally or externally present, it is necessary to supply this artificially to insure the complete success of the cold douche in rousing the little patient to vitality; a very inconsiderable prolongation of cold would be sufficient for ever to prevent this revival, but by the alternate application of hot and cold water, nervous reaction is exhibited in increased cutaneous circulation, proved by the turgor and redness of the skin, and firmness of the limbs, which are felt and seen long before vitality is sufficiently restored to be evinced by a cry. Numbers of new-born children have died from sudden or prolonged immersion in cold water; and Mauriceau, in his treatise on Obstetrics, says that infants have even died merely from baptism in cold water; yet cold, properly applied so as to insure reaction, has proved one of the most powerful means of rescuing even infants from a dangerous state of asphyxia. During the Russian campaign, soldiers were known to expire suddenly, as if thunderstruck, from excessive cold; and at Smolensko more than thirty grenadiers thus fell dead when attempting to set themselves in a line on a height beyond the Borysthenes (Beaupré). Cold, in producing stupefaction, acts, as Prosper Alpinus says, exactly as narcotics do; that is, it produces internal congestions, chiefly of the brain and lungs, with coma and asphyxia. Of course, in the treatment of disease, no one would think of pushing cold to such extremes; but when the nervous reactions are weakened by the exhaustion of disease and defective nutrition, as well as numbed by poisonous blood, a very much lower degree of cold applied externally will suffice to produce dangerous symptoms, and to attempt to treat the living body as we would a hot poker, seems to court their advent. A prolonged cold bath will effectually kill a healthy man—how much more speedily may it not kill a sick man? All physiology teaches us that the mere abstraction of heat is not only insufficient to restore a sick man to health, but rather the reverse, unless the cold be so applied as to insure vital reaction and an improvement in all the secretions. This, however, seems hardly to be the tendency of modern teaching, which, so far as we can understand it, seems to be that it is only necessary to cool the body down to a certain degree, and avoid if possible any reaction. It can only be by chance that any such procedure is ever successful. It is many a day since Lancisi wrote—"Nullum optimum ad curandos ab epidemicis febribus inventum esse remedium ipso nivis usu;" since then many authors have treated of this subject. Much may be learned from the works of Currie, Robert Jackson, Beaupré, etc., and it would be well perhaps to reconsider the whole subject from an eclectic point of view. The tendency of Dr Fox's reasoning is to show the paramount importance of the abstraction of heat from hyperpyrexial patients, but the tendency of his carefully-observed facts seems rather to confirm the importance of a judicious employment of cold in the rousing of the fast-failing nervous reactions; the return of free perspiration, and the reappearance of the rheumatic joint affections being, in his opinion, the most favourable symptoms—symptoms which, we need hardly say, cannot be regarded as simply the result of chilling the surface of the body, or lowering the general corporeal temperature. Our remarks, therefore, have been more directed against an over-zealous pushing of Dr Fox's views rather than against his own cases, which form a most remarkable contribution to the science of therapeutics, and are well worthy of careful study. What effect, if any, the large doses of quinine and the very considerable doses of brandy (20 to 30 oz. in twenty-four hours) administered had upon the course of the disease, and how this powerful stimulation acted, is also deserving of the most careful consideration in any attempt to estimate at its true worth the treatment employed, and to assign to each of its elements its proper value.

Psychic Force and Modern Spiritualism: A Reply to the Quarterly Review and other Critics. By WILLIAM CROOKES, F.R.S., etc. London: Longmans, Green, and Co.: 1872. Pp. 24.

IN this pamphlet Mr Crookes attempts to combat his reviewers. It is not worth while to follow his arguments. In his preface he states that he wishes for the present "to be considered in the position of an electrician at Valentia, examining, by means of appropriate testing instruments, certain electrical currents and pulsations passing through the electric cable, independently of their causation, and ignoring whether these phenomena are produced by imperfections in the testing instruments themselves — whether by earth currents or by faults in the insulation — or whether they are produced by an intelligent operator at the other end of the line."

At p. 474 of the *Quarterly Journal of Science* for October 1871, Mr Crookes says:—"Before fitting up special apparatus for these experiments, I had seen, on five separate occasions, objects varying in weight from 25 to 100 lbs., temporarily influenced in such a manner, that I and others present could with difficulty lift them from the floor. Wishing to ascertain whether this was a physical fact, or merely due to a variation in the power of our own strength under the influence of imagination, I tested with a weighing machine the phenomenon on two subsequent occasions when I had an opportunity of meeting Mr Home at the house of a friend. On the first occasion, the increase of weight was from 8 lbs. normally, to 36 lbs., 48 lbs., and 46 lbs. in three successive experiments tried under strict scrutiny. On the second occasion, tried about a fortnight after, in the presence of other observers, I found the increase of weight to be from 8 lbs. to 23 lbs., 43 lbs. and 27 lbs. in three successive trials, varying the conditions." We venture to think that these experiments thus detailed will leave no doubt in the mind of any party of average intelligence as to the existence of an "intelligent operator at the end of the line," though they may create great wonderment why so intelligent an operator should content himself with mystifying Mr Crookes, Lord Lindsay, etc., and not rather at once realize a fortune by a judicious employment of his peculiar art in the ordinary course of trade. We concede to Mr Crookes all honesty of purpose; but we need hardly say, that we deem him deficient in the only psychic force whose existence we acknowledge—the force of intellect.

Scheme for obtaining a better Knowledge of the Endemic Skin Diseases of India. Prepared by TILBURY FOX, M.D. Lond., F.R.C.P., etc.; and T. FARQUHAR, M.D., Surgeon-Major, H.M.S. Bengal Medical Service (retired). 1872.

THE object of this document is to collect information relative to certain diseases specially prevalent in, or peculiar to, India. The document, which goes to India by next mail for general distribution, has been prepared by Dr Tilbury Fox, with the assistance of Dr Farquhar; the former is the physician to the department for diseases of the skin at University College, London; the latter lately held an important medical appointment in India.

The first section of the paper gives particulars as to the means by which it is suggested the desired information should be obtained, and the diseases to which reference is made.

Two main objects are proposed:—

1. To obtain and then to circulate a better knowledge of the more important endemic skin diseases of India, or such as principally attack the skin; and thereby

2. To bring about an agreement, which is far from existing at present, between the profession in India and in England as to the nomenclature, the typical character, the varieties, and the probable or demonstrated causes of the diseases in question.

At present very considerable confusion arises from the want of an agreement as to the use to which particular terms should be put—elephantiasis, for example—the same disorder being spoken of by different persons under different names, and *vice versâ.* The prevention of such confusion would itself be a great gain to science, as it would enable observers to conduct investigations relative to diseases with infinitely less labour, and unquestionably with greater certainty of obtaining reliable data.

One special though indirect result of the inquiry would be, that those who were training in this country for medical service in India would be enabled to acquire with no little readiness a satisfactory knowledge of a certain class of diseases of the commonest occurrence in India, the components of which class they would have at once to treat on their arrival in that country, and of which no great amount of clinical experience can be obtained in England. Further, the inquiry would be of great use to the English, and indeed the Continental practitioner, in furnishing him with valuable guides for the more speedy recognition and the better treatment of the numerous cases of peculiar skin diseases that are imported into this country and elsewhere from India, a locality that abounds in material for scientific investigation as regards the influence of climate, etc., upon cutaneous disease.

It is also believed that the inquiry may tend to show not only what are the special diseases due directly to special climatic influences, but also the character and extent of variations in the same disease induced by differences of climate: for the same disease does undoubtedly vary in its characters in different countries.

The mode in which it is believed the objects above stated may be easily secured is by seeking the assistance of the scattered and able medical officers of India in the collection of facts, and by utilizing and unifying the experience and opinions of these gentlemen.

The details of the scheme are so arranged as to remove, it is believed, some of the special difficulties under which the Indian medical officer labours in the prosecution of careful investigations into the nature and causes of disease in India; though in the face of very special obstacles it is surprising how good is the work done by Indian observers from time to time. Reference is specially made to the few opportunities afforded Indian medical officers of consulting libraries, of obtaining access to the multifarious periodical publications in which are recorded the most recent researches of European pathologists, the difficulty of carrying about with them the necessary apparatus for minute and experimental inquiry, and the like.

The difficulties referred to will be in great measure lessened by giving a resumé of the latest researches and the opinions of European dermatologists relative to the various diseases to which it is thought desirable to direct attention, and by indicating the points of doubt which require to be cleared up, and the line of investigation which should be pursued in the future, for the further elucidation of the nature and causes of particular diseases.

By indicating the several points upon which information is specially needed, not only will the main objects of the inquiry be promoted, but the time and labour of Indian medical officers will be greatly economized.

The endemic skin diseases of India deserve to be studied for themselves for several reasons. They are a great source of distress to sufferers from their attacks. They are the indications in many cases of morbid action, affecting the body profoundly and arising from preventible causes, and when closely studied they afford valuable information as to the causation of disease. They crucially test the action of remedies, whilst a more correct and a wider knowledge of their causation will greatly tend to increase the confidence of man, be he European or native, in the power of hygiene and medicine to relieve suffering. It is not at all unlikely, moreover, from concentration of attention to this, till recently, but slightly cultivated branch of medical science, important facts may be gained as to the nature and action of remedies which are successfully employed by European and native medical men in India, but with which we are unacquainted in this country. Some of these remedies are frequently mixed up with inert or dangerously active substances which compose the lengthy prescriptions of the hakeem, in such a way as to render it a matter of difficulty to determine what the active powers of these medicines individually are. Already something has been done to define them by medical officers in India, who would be glad to see them attract the attention of the therapeutic student in Europe. Many good drugs have still to be recognised, and they are considered too valuable to be disclosed by the native practitioner. With the progress of education, however, it is to be hoped the prejudices that lead to secrecy will be overcome, and the real or pretended powers of many undisclosed remedies be fully understood.

The scheme is to give, under the head of particular diseases, a brief statement of the views of the leading European dermatologists as to the nature of these diseases, to indicate doubtful points and the chief questions to be now determined in regard to them, and to ask for answers to precise questions.

The following heads indicate the kind and extent of information sought:—

a. The accurate observation of cases, especially with reference to the exact mode of origin of disease.

b. The microscopic characters of morbid products.

c. Precise information, inasmuch as climatic influences have much to do with the genesis of disease in India, touching the name and character of particular localities in which particular diseases prevail, with exact statements as to the nature and alliances of those diseases. [Situated as medical men are in India, in such varying climates and among such different races acted upon by such a variety of circumstances as to food and clothing, etc., they might gather valuable information about the geography of diseases of the skin. It is notorious that sharp lines seem to cut some diseases off from different parts of the country. This is the case as regards severe forms of itch, leprosy, Madura foot, Delhi sores, etc.]

d. The nature and peculiarities of the food and water supply of the affected population.

e. The tribes or castes in which particular diseases occur, and the habits of these tribes, ex. migratory or otherwise. [The influence of certain religious practices, such as that of covering the body with ashes and other earths, as followed by fakeers and religious medicants, deserves notice.]

f. The occupation of the attacked.

g. The dress of the attacked, especially with regard to the exposed or unexposed nature of the seats of disease. [It is an interesting question, for example, to determine whether the diseases of the scalp are more frequently developed in races that cut short their hair and shave their head, or among those who keep their hair long. Many of the Hindoos shave all or the most of their scalp, head, arm-pits, etc. The Mahommedans, as the rule, cut the hair close. The whole Seikh race never allows a razor or scissors to touch a hair. Many millions of Indians go about bareheaded; others wear only skull-caps; others wear great masses of cloth like tablecloths on their heads. The influence of these practices on disease it is important to know.]

h. The observed differences between disease as seen in the darker races of the East and in Europeans, and the differences in the same disease as observed in India and in Europe.

i. The connexion between season and disease. [Where the variety of climate is so great as in India, the observation of this point might lead to important results.]

The following are the diseases to which it is thought desirable that attention should be directed:—

1. Morphœa. 2. Scleroderma. 3. Framboesia. 4. Delhi sore. 5. Keloid. 6. Fibroma. 7. The Elephant leg, or Elephantiasis Arabum, or tropical big leg. 8. The Fungus foot of India, or Madura foot. 9. The true Leprosy, or Elephantiasis Græcorum. 10. Leucoderma. 11. Pityriasis vesicolor in unusual forms. 12. Burmese ringworm. 13. Malabar itch. 14. Lichen tropicus, or prickly heat.

N.B.—The information which is particularly asked for, is essentially such as is precise. Mere general statements or replies to questions of a wide and general character are specially undesired. Special forms for note-taking and for tabulating cases are given with the accounts of certain of the diseases.

When sufficient data have been collected, a special summary report will be made on the whole subject. Each observer will have full credit given him for any contribution he may furnish towards the report.

Morbid specimens properly preserved, if sent home, would be thoroughly investigated and the results embodied in any report made. Representations of diseases in the way of photographs, sketches, and coloured drawings, will be very useful.

The Skim-Milk Treatment of Diabetes and Bright's Disease; with Clinical Observations on the Symptoms and Pathology of these Affections. By ARTHUR SCOTT DONKIN, M.D. Edin., M.D. Durh., Lecturer in Medical Jurisprudence in the University of Durham, etc. London: Longmans, Green, and Co.: 1871. Pp. 317.

THERE are no questions of more importance to the practitioner than those connected with the treatment of diabetes and of Bright's disease, both of them most interesting, important, and unfortunately too common diseases. In estimating the value of the present work from a practical point of view, we must first separate Dr Donkin's pathological from his practical researches, and next endeavour to ascertain the value of the latter. In the pathology of diabetes, Dr Donkin has not advanced beyond Pavy, and he ignores the researches of Flint, Lusk, and others, which have tolerably conclusively proved the glycogenic function of the liver to be a fact. Here, therefore, he is behind the age; not only has he not added anything to our knowledge of the causation of diabetes, but he is even ignorant of our present standpoint in regard to its connexion with the liver. The same may be said in regard to the mode in which the glycogenic function of the liver is affected by the nervous system; here he has not got beyond Dickenson, whose views he controverts, while he is wholly ignorant of the researches of Cyon and Aladoff, on the influence of the vagus in the production of sugar. No mention is even made of Cantani's views as to the elimination of sugar being the result of diminished combustion, though that is intimately connected with any rational theory of his own method of treatment. The essence of the pathology of diabetes seems, in the present day, to resolve itself into two questions: 1*st*, How far the appearance of sugar in the urine is the result of imperfect combustion or combustibility of the glycogen formed in the liver? 2*d*, How far this glycosuria is the result of simple increase of the glycogenic function—an increase which may be brought about in two ways, viz., by alterations in nervous action produced reflexly by derangements of other organs, or by organic disease of certain parts of the nervous system itself. All these causes we believe to be in action in different cases, and essentially to influence their curability; but Dr Donkin has not only not endeavoured to ascertain their relative importance, but he seems entirely ignorant of their existence.

Dr Donkin seems also to take for granted that our present tests for sugar in the urine are all that could be wished, yet any considerable clinical experience would have taught him that this is far from being the case, that density varies even more with diet than with amount of sugar, and that all the tests—except perhaps those by polarization or fermentation, of which we ourselves have no accurate experience—are so fraught with fallacies as to be utterly unreliable in the ascertaining the presence of small, yet clinically important, quantities of sugar.

In estimating the value of Dr Donkin's work, we must therefore restrict ourselves entirely to his cases; and here we are met by the remarkable facts that, during a period of more than two years, Dr Donkin has only met with seven cases of diabetes whose results he cares to record, in not one of which has the patient been restored to such a state of health as to be able to return to ordinary mixed diet containing starch, while three of these cases proved fatal, and a fourth gave up the treatment, the result being unknown. Of these seven cases, therefore, collected—and we must surely suppose selected, for diabetes is no uncommon disease—only three have attained a modicum of health consistent with a diet from which starch is still rigorously excluded. This we conceive is no result to boast of, and the attainment of which does not demand any such exuberant flourish of trumpets as is represented by the publication of a work of upwards of 300 pages.

The therapeutic employment of milk in disease generally is a matter dating from the days of Hippocrates, and which has been comparatively recently elucidated in our own pages, in an admirable paper by Dr Karell of St Petersburg (August 1866). While its special application to the treatment of diabetes has been recommended by Dr Headland since 1859, and insisted on by Dr Smart in 1863, the only absolute novelty in Dr Donkin's views consists in his absolute exclusion of fatty matters from the diet—in the rigid employment of skim-milk. Fatty matters have not hitherto been considered as deleterious in the treatment of diabetes, but, on the contrary, have generally been recommended—our own experience, so far, leads us to confirm Dr Donkin's views, and to regard fatty matters and eggs as both likely to be injurious; but this, as yet, is a mere plausible conjecture, and is not founded on any certain basis.

Even the very meagre statistics of Dr Donkin leave us in no doubt as to the value of the skim-milk treatment of diabetes; they show us clearly enough that it is not sufficient for a perfect cure, though the diet, from its nature, cheapness, and ready procurability, is in many cases an admirable means of keeping the disease in abeyance. On the other hand, it is a diet difficult to inaugurate in such ticklish customers as diabetic patients, and, from its insipidity, mawkishness, and want of solidity, it is difficult to continue for any length of time. It is certainly not a cure, as Dr Donkin's cases themselves prove; for poor people of firm minds who value life for its own sake, it affords the only diet they are likely to be able to obtain by which life and a certain amount of usefulness may be maintained; but for those who are better off, there is no need to lead them through the risks of an apprenticeship to a milk diet, afterwards to be combined with animal food and green vegetables, when the same benefits can be obtained without the risks by commencing at once with this diet mixed as to quality and only restricted as to starch, which very few diabetics indeed can ever be brought to ingest with impunity.

In regard to the treatment of Bright's disease by skim-milk, Dr Donkin is inclined to restrict its utility solely to inflammatory cases; but these are precisely the cases in which similar symptoms are so often associated with very different pathological lesions. A simple catarrh of the tubules, even of some standing, is a very different pathological disease from a large white kidney; yet the symptoms may be identical; the one may be recovered from, the other never is,—the mere administration of milk is a matter of slight moment in the history of the case. A restricted diet is no doubt useful in warding off uræmic complications in all cases—it can only promote a cure when the disease is purely catarrhal or restricted to a limited portion of the kidney; but a restricted diet may be accomplished by other means more pleasing and more safe to the patient than by confinement to skim-milk. While not denying, therefore, the usefulness of skim-milk in some such cases, we may safely enough object to the dogmatism which would propound it as in itself curative on the strength of only five cases, one of which was fatal.

Recollections of Past Life. By Sir HENRY HOLLAND, Bart., M.D., F.R.S., D.C.L., etc. London: Longmans, Green, and Co.: 1872. Pp. 346.

SIR HENRY HOLLAND has been a man singularly fortunate in his life. Blessed with a remarkable equanimity and moderation of mind, his early introduction into that elevated society amid which he has ever since continued to move, rapidly enabled him to attain the extreme of his worldly ambition as to wealth, while his extensive and well-grounded erudition enabled him to profit in a desultory sort of way by the conversation of the various remarkable and distinguished personages into whose company he was temporarily thrown, as well as by the remarkable cosmical phenomena with which he was brought into contact in the course of his annual travels. The result of this is this extremely interesting volume, embodying the recollections of a life now in its eighty-fourth year, and spent amid the most remarkable personages, scenes, and events of that period which comprises certainly the most extraordinary historical phantasmagoria ever exhibited to mankind, in the rise and fall of Napoleon I., and all involved in that as well as in the lamentable episode of the early history of Queen Caroline as Princess of Wales. Apart from the scientific history of this period, which in itself is of no mean value, its social history involves the consideration of problems which can never fail to interest mankind, and, as revealed by one so much behind the scenes as a fashionable, trusted, and, clear-headed physician, must possess an importance which cannot fail to ensure a widespread and intelligent auditory. We shall not spoil the interest of this work by imperfect quotations; it must be read to be enjoyed, or even understood; and we cordially recommend it to our readers as alike interesting and enjoyable.

A Treatise on Hæmophilia, sometimes called the Hereditary Hæmorrhagic Diathesis. By J. WICKHAM LEGG, M.D., etc. London: H. K. Lewis: 1872. Pp. 158.

DR WICKHAM LEGG is already favourably known as an accurate and trustworthy observer of medical facts, and this little work will certainly add to his professional reputation. The disease he treats of is one concerning which not much is known reliably, and we cannot indeed say that Dr Legg has added much to our knowledge of the subject; but in presenting us with an analysis and epitome of 163 authors who have written on the subject, he has deserved well of the profession, and has laid a foundation upon which himself or others may hereafter securely build. As yet, however, we have obtained no clear idea of what this disease is, nor whether it is essentially a disease or only a symptom, and the proper treatment is, as we may conceive, still a desideratum. Apart, however, from all practical value which it does not possess, this little work has a literary value which can scarcely be overestimated, and Dr Legg deserves all credit for the labour he has bestowed on the production of a monograph which hereafter will constitute the chief repertorium of facts connected with this disease, which is not more interesting than obscure, and whose very name is a riddle—for what is the signification of hæmophilia? And whence is its latter half derived? Φιλία is said to be the derivation, but it seems so senseless and absurd, that we hope etymologists may succeed in discovering some more intelligible origin for it.

Part Third.

MEETINGS OF SOCIETIES.

OBSTETRICAL SOCIETY OF EDINBURGH.

SESSION XXXI.—MEETING IV.

Wednesday, 10*th January* 1872.—Professor SIMPSON, *Vice-President*, in the Chair.

I. NEW CAUSE OF HÆMORRHAGE FROM PLACENTA.—*Dr Sidey* exhibited a placenta, and stated he had lately attended a patient in labour, and that at the termination of the first stage a considerable discharge of blood occurred of a dark character, with stringy clots. On examining the placenta afterwards, he found that the hæmorrhage had been caused by the separation of the membranes from the surface of the placenta, as indicated by a flattened clot below the membranes. The placenta seemed to have become hypertrophied round its circumference, its edges being thickened and extended about two inches beyond the circular sinus, with the membranes adhering to it, except where the clot was situated. He had shown it in its fresh state to Professor Simpson and Dr Keiller, who were astonished at the ease with which they could remove the membranes from the hypertrophied portion of placenta, and thought that the hæmorrhage had been thus produced during labour.

II. *Dr Andrew* exhibited a FŒTUS which had evidently remained *in utero* for three months after its death. Mrs M., æt. 33, had one child seven years ago. She married her present husband in September 1870, and menstruated regularly till the last week of February 1871. She felt life in the beginning of July; went on most satisfactorily till the end of August, when all movement of the child ceased, and instead of increasing in size she gradually got smaller. Her health, however, was unimpaired, her appetite continued good, and she slept well. She went into labour on 3d December, and was shortly delivered of this fœtus. She made an excellent recovery, and was soon going about her usual duties.

Professor Simpson thought the case very interesting from the long time the fœtus had been retained after its death. The death of the fœtus was probably owing to the coiling of the cord round the right thigh. He noticed that the cord was so tightly coiled round the thigh that there was a deep indentation in it.

SESSION XXXI.—MEETING V.

Wednesday, 24*th January* 1872.—Dr THOMSON, *President*, in the Chair.

Dr William Johnston, Stirling, and Dr Francis Moinet, 30 Melville Street, were admitted as Ordinary Fellows of the Society.

I. *Professor Simpson* showed a PLACENTA sent to him by Dr Groves. There was a peculiar ring within its border, and a considerable collection of serum between the amnion and chorion; one of the lobules of the placenta was detached, being only joined to the general mass by a tag of membrane. The placenta was in a state of fatty degeneration. The child had died during parturition, probably from partial separation of the placenta.

II. *Dr Croom* read a paper entitled, A CASE OF SYNCOPE DURING LABOUR.

Dr Keiller said the difficulty was to keep your patient in the horizontal position. He corroborated Dr Croom's remarks as to the weakened state of the auxiliary powers, and advised the early use of the forceps. He had given chloroform in such cases without any bad effects.

Professor Simpson remarked that the case would have been more complete if a post-mortem examination had been obtained. In persons of a rheumatic constitution the blood has a tendency to coagulate, clots would be apt to form in the veins of the pelvis, and, being caught in the small arteries of the lungs, would cause lobular pneumonia. He mentioned a case in which pneumonia occurred a month before labour, and where there was great distress during the pains from dyspnœa. He agreed with Dr Keiller in giving chloroform in simple valvular disease, but in dilatation of the right side or fatty heart, he considered it contraindicated.

III. *Dr Keiller* read a paper on THE MERITS AND DEMERITS OF THE RECENT TRIAL FOR MALPRACTICE AT STOCKTON-ON-TEES, and proceeded to give extracts from the printed evidence bearing upon the obstetrical points; the principal point being whether the uterus was or was not properly reduced. With reference to the infrequency of inversion, he stated that the late Professor Simpson had never seen a case of acute inversion. He proceeded to mention a case that had occurred in the practice of Dr Dumbreck, where he reduced an inversion the day after its occurrence, the patient being put under chloroform; also another case of acute inversion which took him upwards of an hour to replace.

Part Fourth.

PERISCOPE.

ON THE DIAGNOSIS OF SYPHILIS FROM THE MICROSCOPIC EXAMINATION OF THE BLOOD.—At the meeting of the Vienna Medical Society, on the 12th January 1872, Dr Lostorfer brought forward an entirely novel view in regard to this important subject. He stated that for the last four months he had pursued his investigations in this respect chiefly on material furnished by the clinique of Professor Zeissl, and that the result had been that he had found that the blood of syphilitic individuals, within a period of three or four days, constantly exhibited shining corpuscles, which propagated themselves by gemmation. The addition of a solution of sugar, or of Pasteur's fluid, caused these bodies to shrivel up, and they were afterwards found surrounded by vacuolæ. Professors Stricker and Hebra had repeatedly tested the correctness of his views by subjecting to his examination blood drawn from different subjects, and he had invariably detected those affected with syphilis. The syphilitic bodies in the field of the microscope often amounted to so many as fifty at a time, but were often less numerous. For their development twenty-four hours at least, more usually three to five days, were required, and a temperature of from 46°·4 to 50° Fah., while a lower temperature prevented their development.—*Berliner Klinische Wochenschrift*, 1872, No. 5.

[More recently Wedl has affirmed that this so-called discovery is a myth, but the names of Stricker and Hebra are a sufficient guarantee that it is not quite so utterly baseless, and its importance in regard to the diagnosis and mode of extension of syphilis is sufficient to excite the greatest interest in the solution of this important matter.—Ed. *E. M. J.*]

APOMORPHIA.—It is now some years since this important emetic was brought under the notice of the profession here, yet no report has as yet been made as to its efficacy. Now that it has received the approbation of foreign physicians, we may hope to hear something more of its utility. Siebert, Riegel, and Böhme have ascertained, by numerous experiments on man and animals, that it is an effectual and rapid emetic, acting, according to Böhme, in from four to sixteen minutes, leaving behind it no unpleasant effects, and possessing the important quality that it can be effectually introduced by subcutaneous injection, a matter of great importance in children, and insane and comatose patients. The unpleasant effects occasionally observed have been only giddiness, cerebral oppression, tendency to yawn, and precordial anxiety; and even these disappeared so soon as vomiting occurred, and were always of short duration. No disagreeable results on the digestive organs were ever observed, and the place of injection was never found to suppurate. The physiological effects on the pulse, temperature, and blood-pressure have been thoroughly investigated by Siebert, and were never found to be of any important practical significance. Siebert found that the quantity necessary to produce emesis, when hypodermically injected in man, was only six or seven milligrammes (0·0925 to 0·108 gr.); and according to Riegel and Böhme the required amount varied from 0·462 to 0·154 gr. The latter employed a solution containing 1 per cent. The observers concur in stating that the most reliable preparation is that supplied by Macfarlan and Co., North Bridge, Edinburgh, under the name of the Hydrochlorate of Apomorphia.—*Berliner Klinische Wochenschrift*, No. 5, 1872.

ABSORPTION OF INSOLUBLE MATTER.—The *Philadelphia Medical Times* publishes an abstract, by Dr Louis A. Duhring, of a series of experiments made by Dr Auspitz, of Vienna, on the absorption of insoluble matter in mammals. The following are the conclusions arrived at:—1. That, in mammals, insoluble matter (starch-flour granules), starting from the peritonæum and subcutaneous tissue, is able to reach the lungs, and through these organs to enter the general circulation. 2. That these granules, in order to go over into the veins, pass through the lymphatic system. (That they are taken up exclusively in this way is not as yet proved.) 3. That the epidermis always presents a considerable, though only relative and not absolute, obstruction to the absorption from the integumentary surface. 4. That the absorption is essentially promoted by the mediation of fat, which goes over into the circulation in the same manner as starch-flour, though even more easily. Finally, the supposition may be offered, even if the direct proof is provisionally deficient, that all that is true of starch-flour, and in a higher degree of fat, may also be asserted of other insoluble bodies of finer division and, therefore, less permanence of form than the starch-flour. The supposition is not in any way contradicted by the discoveries of Auspitz, made in connexion with his well-known inunction experiments with mercury.

THE LUNG TEST.—M. Poncet showed, at a meeting of the Lyons Société des Sciences Médicales (Oct. 1871), the lungs of a fœtus prematurely born at the Hôtel Dieu. The child had cried, breathed, and lived an extra-uterine life of ten hours; but the lungs sank completely in water, as if no respiration had taken place. Such cases, though rare, have been mentioned by Hoffmann and Heister, and show the insecurity of the lung test in forensic medicine.—*Lancet*, 17th Feb. [Similar cases, though occasionally recorded, are yet extremely rare, as is stated even by the most zealous modern contemner of this test, Hanke. A reference to Casper's well-known work on Forensic Medicine, shows clearly enough that the insufficiency lies not in the test, but in the expert who knows not how to apply it properly, or how to interpret its indications.—ED. *E. M. J.*]

RETENTION OF URINE. PUNCTURE OF THE BLADDER WITH DIEULAFOY'S INSTRUMENT. BY M. L'ABBE.—CASE 1. A mason fell from a considerable height stridelegs on a scaffold, bruising not only his perinæum but also the anterior wall of the abdomen. Next day a considerable swelling existed behind the scrotum, with intense pain and some tenderness of the belly. He had not been able to make water since the accident, and the bladder was distended nearly to the umbilicus. The catheter was attempted in vain by the house-surgeon, and again by M. L'Abbé, who then made an incision in the middle line of the perinæum, still without success in relieving the bladder. A protracted warm bath and a large dose of quinine were employed. But as everything failed to relieve the bladder, M. L'Abbé tapped it in the middle line above the pelvis with the syringe trocar, and withdrew between thirty and forty ounces of urine with great ease and little pain. Next day, after repeated failures with the catheter, the urine was drawn off three times by the trocar; and this was continued up to the patient's death on the fifth day. Death was due to rapid peritonitis, the result of the fall; but the bladder was healthy, containing a little normal limpid urine, and no clots or pus. The punctures appeared on the anterior wall of the bladder like fleabites, while no trace whatever of their presence remained on the inner wall of the organ.

CASE 2.—An old man, with an enormous prostate, suffered from complete retention. Various attempts to pass the catheter were quite unsuccessful for two days; he had lost a great quantity of blood, and was in great pain. M. L'Abbé rejected the idea of attempting the catheter, and at once punctured the organ with the trocar, drawing off above forty ounces of urine; a bougie was then passed with ease, and the patient made a good and rapid recovery.

This observation confirms the pathological researches of M. Sappey, which show that a notable difference in the direction of the prostatic portion of the urethra is caused by distention or emptiness of the bladder, making it difficult to sound a patient before the bladder is empty, while it may be easy afterwards.

These cases seem to show that puncture of the bladder, by the above means, is devoid of danger.

OBTURATOR HERNIA.—M. Chassaignac communicated to the Society of Surgery observations on a case of this rare lesion. He remarked on the few cases on record. Astley Cooper had seen only one in life. M. Cruveilhier had reported one. In this case M. Chassaignac found the patient suffering from two crural ruptures, the right one containing omentum and in a quiet state, the left one evidently containing bowel. Symptoms of obstruction were present, stercoraceous vomiting, distention pains, etc.; but operation was postponed, because the patient had had a stool, and it was considered that if these symptoms were due to hernia, operation was already too late.

Next day the symptoms had changed, still more vomiting, but numerous and abundant actions of the bowels. Symptoms of cholera, suppression of urine, no cramps, sore throat, and exhaustion; death in the afternoon.

At the post-mortem there was no peritonitis, but a third hernia was found, in the right obturator foramen, which was strangulated. The sac was partially covered by the obturator externus muscle.

M. Duplay called the attention of the Society to the interesting case of obturator hernia, reported by Drs Miller and Chiene in the *Edinburgh Medical Journal* for January 1871, and communicated it to the Society.[1]—*Gazette des Hôpitaux*, 1871, No. 111.

PENETRATING GUNSHOT WOUND OF THE CRANIUM; RECOVERY WITH THE BALL STILL IN THE BRAIN.—On 10th Oct. 1870, C. S., of the 81st of the line, was shot in the forehead. The wound was in the middle line, nearly one inch above the root of the nose, round, and about the size of a fifty-centime piece. The wound in the bone was small, but admitted a probe. Hæmorrhage was excessive, causing syncope. M. Fleschet introduced a probe about four inches before touching the ball, in the presence of several surgeons, who each for himself satisfied himself of the presence of a piece of metal. Ecchymosis of the conjunctiva of the right eye and droop of the lid were present. Vision was completely gone in both eyes from the moment of the injury. Brain-substance escaped with the probe. Next day, in the presence of Baron Larrey, the probe was passed its whole length into the cranial cavity without touching the ball, which must have gravitated backwards by its own weight. On the fourth day a little vision returned in the left eye, the right globe being still immovable and quite insensible to light. The head had to be kept absolutely still, or intense pain came on. The intellect was unimpaired and his spirits good; the patient insisting upon having his cigar regularly. He had no fever, thanks to the very free use of opiates, which calmed him and gave him refreshing sleep. Towards the end of the month the general health began to improve, and he was able to eat without pain, which at first he could not do. An attack of bronchitis did not seem to do him much harm, though the cough was troublesome.

On the 5th of November he was allowed to rise for a little, and could walk, keeping his head stiff and backwards. The wound, which suppurated freely for three weeks, was now almost healed, only a small sinus remaining, which discharged thin yellow serum.

At the end of November the pain, which had been constant in the back of the head, changed its position, and was felt on top of head and in forehead. Since the third day vision had been gradually returning in the left eye, and by the middle of December, though after some relapses, the patient was able to play at cards. By the middle of January the wound was completely closed, by a fibrous cicatrix. The external table of the frontal bone is deficient to the extent of a franc-piece. The appetite is perfect, and sleep uninterrupted; the patient plays at cards and walks about freely; in the first week of February he was allowed to go to a convalescent hospital.

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[1] Dr Chiene's name appeared as Dr Chieuc.

The facts of the case seem to make it impossible to doubt that the ball is really in the brain, and the symptoms would render it nearly equally certain that it had traversed the anterior lobe, and then, by its weight, made its way into the middle, and, perhaps eventually, the posterior lobe. Is the cure a perfect or permanent one? Has a protective cyst formed which will save the parts from injury? It does not seem unlikely, and it seems that surgeons have been too apt to exaggerate the danger of such wounds of the brain. Fracture of the skull with depression, with presence of fragments in the brain and with abscess, have often recovered. The above case is remarkable from the absence of fever, there having been no symptoms of stupor, delirium, cerebral compression, or hallucination. We cannot ascribe this happy result entirely to the opiates that were so freely given; still it is well to remember that, by the older surgeons, opiates were considered of great value in the treatment of injuries of the head. Vidal regards penetrating wounds of the brain as not so dangerous as many others, as the shock is less and the exit to pus is free. We believe that in cases like the above it is right to wait, and to make no attempt at extraction of the ball.

Two other cases bear on the subject. Dr B., Surgeon-in-Chief of Zouaves, was shot in the left side of the head when dressing a wounded soldier; was first insensible, but eventually recovered sensitiveness, and was hemiplegic and spoke with difficulty. After six months, during which the symptoms improved, he was foolish enough to commit an error in diet and wine, dying with cerebral symptoms in twenty-four hours. The ball was found encysted in fibrous structure in the substance of the brain. The second, a Spahi, had his cranium penetrated by a ball, and made a good recovery after some months; speech and memory being a little affected.—*Gazette des Hôpitaux*, Nos. 147, 148; 1870.

Note by Translator.—There are many similar cases in the records of surgery; experience shows, however, that a fatal issue, sometimes very sudden, may result from any indiscretion, such as over-excitement or intemperance, many months after the infliction of the wound.

ANTI-ODONTALGICS.—Those who have experienced the

> "Venom'd stang
> That shoots the tortured gums alang,
> And through the lugs gi'es mony a twang
> Wi' gnawing vengeance,"

will appreciate the following remedies proposed by M. Magilot to relieve their sufferings:—

1. ℞ Chloroformi; laudani de Sydenham (a compound wine of opium of the strength of 1 to 8), āā two parts; tinct. benzoini, eight parts; mix.

2. ℞ Tinct. aconiti; liquoris Hollandici ($C^4 H^4 CC^2$), āā two parts; tinct. benzoini, eight parts.
3. ℞ Chloroformi; creosoti; laudani de Sydenham, āā two parts; tinct. benzoini, eight parts.

The two first are simply calmative; the last is more energetic, by reason of the anæsthetic action of the creosote, for which pure carbolic acid may be substituted. The benzoin acts simply mechanically, being precipitated by the saliva among the fibres of the cotton on which these liquids are introduced into the aching tooth, it helps to retain the more active ingredients in contact with the part affected. A small bit of hydrate of chloral introduced into an aching tooth is also frequently useful, and the stopping may be made more permanent by soaking the cotton in mastic varnish, or by employing a piece of white gutta-percha softened in boiling water.—*Lyon Medical*, Jan. 1872.

Part Fifth.

MEDICAL NEWS.

Obituary.—On the 31st of January there died at Andersey, Torquay, **George Edward Day**, M.D., F.R.S., who was Chandos Professor of Anatomy in the University of St Andrews from 1849 to 1863, when he retired in consequence of broken health, the result of an accident which happened to him two or three years previously on Helvellyn. By this accident his right humerus was fractured at the surgical neck, and also two inches above the elbow, which was itself dislocated. The upper fracture remained permanently ununited, and caused considerable deformity and incapacity of the limb; and yet, in spite of this incapacity, which necessitated the lifting of his hand on to the writing-table, in spite of continually-increasing rheumatic ailments and consequent exhaustion, he continued to the last his literary labour in connexion with various journals both at home and abroad. His original works of importance are those on "Diseases of Advanced Life," and on "Chemistry in its Relations to Physiology and Medicine;" but besides these he published various articles in different periodicals, both professional and non-professional, and was a voluminous translator from both French and German.

John Otto, M.D.—Our readers must have been painfully struck by the sudden and unexpected death of Dr John Otto of Pathhead, who was so long and widely known, and so highly esteemed throughout the southern district of the county. Dr Otto passed as a surgeon in 1829, and for upwards of forty years maintained an extensive and successful medical practice in and around Pathhead. Nor was the usefulness of Dr Otto confined to the sphere of his professional labours; for, from his eminent business qualifications and friendly disposition, he was very often applied to by friends and neighbours for counsel and assistance in matters of difficulty, and to such applications he always readily assented. On public as well as on private grounds, Dr Otto will be very extensively mourned and missed.—*Dalkeith Herald*, 23d Feb.

SIR WILLIAM STIRLING-MAXWELL was installed as Lord Rector of the Edinburgh University, on Monday 5th February, when he delivered a most lucid and admirable address, which, as reported in the public prints, consisted mainly of advice to the students in the conduct of their studies; in the course of which he enlarged pretty freely in favour of the female medical movement, and concluded by offering an annual prize of ten guineas for the best essay on a historical subject. We regret to say that Sir William's address was interrupted by such a noise of stamping, whistling, and penny-trumpet blowing, that it was impossible to hear it. We regret this much for the sake of the students themselves, who would unquestionably have been much benefited by the noble sentiments which flowed from the lips of the distinguished orator, and which were quite as exuberant with life as the students themselves, though rather more chastened by experience. Our contemporary the *Lancet* seeks an excuse for this disgraceful proceeding in the assumed fact, that the class of young men now attending the Edinburgh University is inferior socially to their predecessors of ten years ago, and it argues from this assumption that, in spite of its vast numerical superiority, Edinburgh has lost caste in comparison with London, and—as our contemporary modestly adds—other seats of learning. "Qui s'excuse s'accuse," and such a slur would upon any ordinary occasion have been allowed to pass uncontradicted; but the circumstances under which this statement has been made warrant us, we think, in making the assertion, based on our own personal experience, that at no period, during the past thirty years at least, have the students of the Edinburgh University been more numerous, or, taking them as a body, of a better educated or socially higher class than they are at present. It might not perhaps be difficult to find reasons for the present outbreak—possibly the spread of Good Templarism and the decay of "Oineromathic clubs," and similar harmless means of getting rid of the superfluous energy of youth, may have had something to do with it; and in this respect the continuous grind involved in the regulations of the General Medical Council may be partly to blame; but of this we are quite certain, that it is no decay in social quality that produced this noisy demonstration, though, probably enough, its element of quantity caused it to be more widely heard, and more hardly commented on.

SMALLPOX still prevails amongst us, though the admissions to hospital show a considerable diminution during the week ending

18th February from the preceding one, being only 178 against 201 in the preceding week. Still the disease, as shown by the mortality returns, is spreading amongst the classes who do not seek hospital relief. Here, however, it will be speedily checkmated by that provident re-vaccination which has been so general. Had it been universal, we would have had a very different return to make to the Registrar-General. The history of the present epidemic—if it ever be written, and we hope it shall be—if it brings out anything at all, will certainly bring out, with great prominence, the efficacy of re-vaccination as a preventive of death from smallpox, an efficacy even greater than that of a previous attack of smallpox; a fact well known and recognised by all writers on the subject, though too often ignored, especially by the public.

British Medical Service.—List of Medical Candidates of H. M.'s British Army who were successful at the Competitive Examinations held at London in August 1871, and at Netley in February 1872, after having passed through a course at the Army Medical School, Netley.

No.	*Names.*	*Studied at*	*No. of Marks.*
1.	Cottle, E. W.,	Oxford and London,	5118
2.	Ash, R. V.,	London and Aberdeen,	4625
3.	Connolly, P. S.,	Dublin,	4510
4.	Dwyer, C. E.,	„	4447
5.	Rogers, J. G.,	„	4445
6.	Fasken, W. A. D.,	London,	3993
7.	Connolly, B. B.,	„	3927
8.	Edge, J. D.,	Dublin,	3866
9.	Barrow, F. E.,	London,	3837
10.	Blood, R.,	Galway and Dublin,	3797
11.	Barrow, H. J. W.,	London,	3703
12.	Bridges, W. P.,	„	3695
13.	Drury, R.,	Galway and Dublin,	3694
14.	Grant. W. C.,	Dublin,	3654

At the recent meeting of the Edinburgh University Court, Dr William Robertson, Mr Benjamin Bell, and Dr William Dumbreck, were appointed Examiners in Medicine for the ensuing year.

On the evening of 15th February, the Royal Medical Society had its annual dinner—Mr Edward Willis Way, M.B., C.M, the Senior President, occupied the chair, and Mr Lewis Shapter, B.A. Cantab., was croupier. The speeches of the evening in no respect exhibited any falling-off in ability, or in that tact and refinement of expression indicative of social position; and in spite of his strongly Conservative sentiments, Mr Shapter effectually brought down the house—to use a technical expression—when he stated his hope that we might still look forward, as well as back, to a period when

> "Britain's lifted finger and her frown
> Might call the nations up, and cast their tyrants down."

This meeting was further remarkable from the fact that, in the very home of Jenny Geddes, the Bishop-Coadjutor was called up to return thanks for the clergy. It is surely no bad sign of the Edinburgh students when their representative social meeting is countenanced by the presence of the highest dignitary of any Church; and it is no small compliment to the teaching of our University when the alien element—we use the term in no derogatory sense—is found to be sufficiently strong to secure that the Church represented is the one most closely allied with their own.

SUBSCRIPTIONS TO GOODSIR MEMORIAL.

Collected by Dr M. Watson.

Dr Andrew, Edinburgh,	£1	1	0
Thos. Annandale, Esq., F.R.C.S.E., Edinburgh,	2	2	0
Dr Ballantyne, Dalkeith,	1	0	0
Dr Mitchell Banks, Liverpool,	1	1	0
Mrs R. Barclay, Montrose,	1	0	0
Dr Buist, Perth,	1	1	0
Dr Caton, Liverpool,	1	1	0
Dr Coughtrey, Edinburgh,	1	1	0
Dr Halliday Croom, Edinburgh,	1	1	0
Dr Kirk Duncanson, Edinburgh,	1	1	0
Dr Finlay, Brechin,	1	1	0
Dr Thomas Fraser, Edinburgh,	2	2	0
Wm. Gourlay, Esq., Dundee,	2	2	0
Dr Gourlay, Weston-super-Mare,	3	3	0
Dr J. R. Hardie, Edinburgh,	1	1	0
Dr Howden, Montrose,	1	0	0
Dr Lucas, Dalkeith,	1	0	0
Messrs Maclachlan and Stewart, Edinburgh,	1	1	0
Dr Macdowall, Inverness,	1	0	0
Dr M'Intosh, Murthly,	£2	2	0
Dr Francis Moinet, Edinburgh,	1	1	0
Dr J. S. Muir, Selkirk,	0	10	6
Lawrence Pullar, Esq., Bridge of Allan,	5	0	0
Dr Alfred Pullar, London,	1	1	0
Hugh Rose, Esq., jun., Edinburgh,	1	1	0
Dr James A. Russell, Edinburgh,	1	1	0
Dr Scott, Musselburgh,	1	1	0
Dr Henry Steele, Montrose,	1	1	0
Mr Stirling, Edinburgh,	1	1	0
Professor Traquair, Dublin,	1	0	0
Wm. Watson, Esq., Edinburgh,	1	1	0
Dr Watson, Montrose,	1	1	0
Dr M. Watson, Edinburgh,	5	0	0
Dr S. Wright, Morningside,	1	1	0
Dr P. Young, Portobello,	1	1	0
A Former Pupil,	0	1	0
Dr P. Braidwood, Birkenhead,	1	1	0
Total,	£51	4	6

PERIODICALS RECEIVED.

American Journal of Insanity,—October.
American Journal of Obstetrices,—Nov.
American Journal of Syphilography and Dermatology,—January.
American Journal of the Medical Sciences,—October.
American Practitioner,—Nov. 1871 to Feb. 1872.
Annales d'Oculistique,—Sept. to Dec.
Australian Medical Gazette,—August to October.
Berliner Klin. Wochenschrift,—October 30, 1871, to February 19, 1872.
Birmingham Medical Review,—January.
Births, Deaths, and Marriages, Monthly Return, of,—October to January; Quarterly Return, Sept., Dec.
Boston Medical and Surgical Journal,—October 28.
British and Foreign Medico-Chirurgical Review,—January.
British Medical Journal,—Nov. 4, 1871, to February 17, 1872.
Bulletin Général de Thérapeutique,—Oct. 30, 1871, to February 15, 1872.
Detroit Review of Medicine and Pharmacy,—Nov., Dec.
Dublin Journal of Medical Science,—Nov. 1871, January 1872.
Food Journal,—Nov. 1871 to Jan. 1872.
Garden,—November 25.
Gazette des Hôpitaux,—Oct. 21, 1871, to February 22, 1872.
Gazette Hebdomadaire de Médecine, etc.,—Oct. 27, 1871, to Feb. 16, 1872.
Gazette Médicale d'Orient,—May 1871 to January 1872.
Glasgow Medical Journal,—November.
Journal of Anatomy and Physiology,—Nov.
Journal of Mental Science,—January.
Journal of the Gynæcological Society of Boston,—Nov. 1871 to Feb. 1872.
Journal of the Scottish Meteorological Society,—October.
Lyon Médical,—Jan. 21 to Feb. 18.
Madras Monthly Journal of Medical Science,—October 1871 to January 1872.
Medical Press,—November 1, 1871, to Feb. 21, 1872.
Medical Times and Gazette,—October 28, 1871, to February 17, 1872.
Medical World,—November.
Medizinische Jahrbücher,—Jahrgang 1871, Heft 4.
Monatsschrift für Ohrenheilkunde,—Nov.
New Remedies,—July.
New York Med. Journal,—Oct. to Dec.
Philadelphia Medical and Surgical Reporter,—September 30 to December 30.
Philadelphia Medical Times,—Oct. 16, 1871, to Jan. 15, 1872.
Practitioner,—Nov. 1871 to Feb. 1872.
Revue de Thérapeutique Medico-Chirurgicale,—November 1, 1871, to February 15, 1872.
Virchow's Archiv,—September 18.

Part First.

ORIGINAL COMMUNICATIONS.

ARTICLE I.—*Some of the Medico-Legal Relations of Insanity to Will-making.* By ARTHUR MITCHELL, M.A., M.D., F.R.S.E., Commissioner in Lunacy for Scotland, etc.

IN this paper the discussion of the relations of partial insanity to will-making, is resumed.

There is probably no case on record, in which the validity of a will, made by a partially insane person, was so clearly tried as in the case of Banks *versus* Goodfellow, before the Court of Queen's Bench, in 1870. Chief Justice Cockburn delivered a judgment in that trial, which was remarkable for its care and soundness; and it is probable that the views he then expressed, and the decision he came to, will hereafter rule the decisions of the English and Scotch courts in similar cases.

The testator was admittedly insane. He had been the inmate of an asylum, and he was the subject of certain fixed delusions. He believed that he saw devils or evil spirits, by whom he was pursued and molested, and he entertained an unfounded and violent aversion to a man named Featherstone Alexander, who was not a relative. He had epileptic fits, and it was not denied that his general mental power had suffered. The existence of the delusions, and the occurrence of fits after making the will, were also proved.

At first sight, this scarcely looks like a promising case. It presents a fixed delusion of a broad character, likely to operate on conduct in various and uncertain directions, and in addition to this, an induced weakness of intellect.

On the other hand, it appeared that the testator managed his own money matters in a sensible manner, and that his natural affections were healthy and active.

This man made a will in 1838, leaving all he had to his sister. She died, and he then sent for his solicitor, and gave instructions for the drawing up of a new will. When this was presented in proper form, he read it two or three times, said it embodied his instructions, and signed it. By this second will, he left all his property to his niece, Margaret Goodfellow, the daughter of his said sister, who was besides his heir-at-law. He had other nieces and also nephews, towards whom he always showed a healthy affection. His property was not such as would have made a provision for them all. He therefore provided fully for the niece, who, on her mother's death, became his housekeeper, who had been brought up in his house, and whose mother had been his housekeeper up to the time of her death.

The will therefore was a rational act, deliberately done. It was uninfluenced by, or showed no trace of, his delusion, nor indeed of his impaired mental powers.

Margaret Goodfellow, however, died two years after the testator, and at the time of her death she was under age, unmarried, and intestate. The property thus fell to *her* heir-at-law, who was not related by blood to her uncle, through whom she had acquired the property.

The possible consequence of her death without issue and intestate, was shown not to have occurred either to the testator or to his legal adviser.

The action was brought by John Banks, heir-at-law, after the death of Margaret Goodfellow, to the testator. He naturally felt aggrieved that his uncle's property should thus pass away from his own kith and kin. The question at the first trial, was the capacity of the testator to make a will, and the jury found that he was competent, and that the will was a good and valid one. The misadventure was held to be just what might have happened had the will been made by a man whose sanity had never been called in question, but to whom it had not occurred, and whose law adviser had omitted to point out that the niece, though young and healthy, might die under age, unmarried, and intestate, and that such an event should be provided against. A new trial was claimed, on the grounds that the judge had misdirected the jury, and that the verdict was against evidence, but the court rejected the claim.

The Chief Justice, in delivering judgment, said—" The question whether partial unsoundness, not affecting the general faculties, *and not operating on the mind of a testator in regard to the particular testamentary disposition*, will be sufficient to deprive a person of the power of disposing of his property, presents itself in the present case for judicial decision, so far as we are aware, for the first time; and we therefore feel ourselves warranted, and indeed bound, to consider the question as one not concluded by authority. The question," he added, " is one of equal importance and difficulty, and we have given it our best attention." Certainly no other case can be indicated, in which the question was so direct and pointed.

In the well-known case of Dew *v.* Clark, " the insane delusion had a direct bearing on the provision of the will. In such cases, the delusion being once proved, and its connexion with the will being manifest, there should be no difficulty in setting aside the will."

The peculiarity of the case in hand is, that the delusion could not be seen to have affected the provisions of the will; and it is this which makes it stand apart from others.

The very reverse, however, of the doctrine which decided this case, was laid down in other cases, as for instance in Waring *v.* Waring, and Smith *v.* Tebbit. In these two cases, the doctrine laid down may be shortly stated thus:—"To constitute testamentary capacity, soundness of mind is indispensably necessary; but the mind, though it has various faculties, is one and indivisible; if it is disordered in any one of these faculties, if it labours under any delusion arising from such disorder, though its other faculties and functions may remain undisturbed, it cannot be said to be sound; such a mind is unsound, and testamentary *incapacity* is the necessary consequence." This doctrine runs to nonsense, and refutes itself. Put in other words, it says that the indivisible mind has divisions; that these may be separately in a state of health or disease; that if some are diseased, the others, though in a state of health, are also diseased; that, therefore, some of them may be at the same time both in a state of health and in a state of disease, which is absurd, being within itself contradictory.

It is not, however, by any reasoning of this kind, but by the observation of fact, that we are led to reject this doctrine as erroneous.

It was scarcely judicial, I think, to assert that the mind is one and indivisible, and then build great theoretical conclusions on an assertion, which is both true and false, and true and false in a dozen ways.

"Every one must be conscious," said the Chief Justice in support of his sounder doctrine, "that the faculties and functions of the mind are various and distinct, as are the powers and functions of our physical organization. The pathology of mental disease, and the experience of insanity in its various forms, teach us that while, on the one hand, all the faculties may be involved in one common ruin, ... one or more only of those faculties and functions may be disordered; . . . that while the mind may be overpowered by delusions, which . . . utterly unfit it for the perception of the true nature of surrounding things, or for the discharge of the common obligations of life, there often are, on the other hand, delusions which, though the offspring of mental disease, . . . leave the individual in other respects rational and capable of transacting the ordinary affairs, and fulfilling the duties and obligations, incidental to the various relations of life." In such cases, of course, "the mind must, to that extent, be taken as unsound, just as the body, if any of its parts or functions is affected by local disease, may be said to be unsound, though all its other members be healthy, and their powers or functions unimpaired. But the question still remains, whether such partial unsoundness, if it leaves the affections, the moral sense, and the general power of the understanding unaffected, and is wholly unconnected with the testamentary disposition, must have the effect of taking away the testamentary capacity."

That question the court answered, in the case of Banks *v.* Goodfellow, by refusing a new trial, and thus affirming the verdict of the jury, that the will was a good and valid one.

In short, then, the present rule may be said to stand thus:—In an insane person, if the disorder be partial, and leave the faculties on which the proper exercise of the testamentary power depends unaffected, and if a rational will, uninfluenced by the mental disorder, be the result, that will ought to stand. In the first instance, of course, the presumption should be against any will made by a person who is in any sense or degree insane; but if the foregoing is proved, it should then be held valid.

I have not attempted to lay down any minute rules for the settlement of such cases; what I have endeavoured to do is, to disclose the principles, from a medical point of view, which should act as guides to us in their settlement.

So much, then, for partial insanity. We pass now to the consideration of lucid intervals.

The question of lucid intervals appears less frequently, and is altogether of less practical importance, in criminal than in civil cases. If an attack of insanity before the committal of the deed is ever dwelt on in a criminal case, it is generally for the purpose of asserting, that since that time the accused has never been in his right mind. In other words, there is no occasion for an effort on the part of counsel, in such cases, to establish the existence of lucid intervals; and as the court holds the accused to have been sane unless he is proved to have been insane, there is no effort on the part of the prosecution in such cases to establish intervals of lucidity. Casper says, that in hundreds of criminal cases in which he had been employed, the question of lucid intervals had never once presented itself.[1]

With one exception, I believe no penal code takes any cognisance of lucid intervals, but that exception is interesting. Article 83 (*sub.* 2) of the Hanoverian code runs thus:—"All those are exempted from criminal punishment who labour under any derangement or disease of the mind, by which they are deprived of the exercise of their reason. If the crime be perpetrated during a lucid interval, the condition referred to can only be regarded as a mitigating circumstance."[2] Here we have not only a recognition of lucid intervals in criminal cases, but also—what is quite as unique in penal codes—an acceptance of the plea of insanity *in mitigation*

[1] Forensic Medicine, iv. 234.

[2] Casper, op. cit., iv. 231.

of punishment. This law accepts the existence of lucid intervals, and then proceeds to deal with them as never complete. It does not altogether say, *Semel furiosus, semper furiosus presumitur.* What it does say, I can perhaps better express in an old Scotch proverb, *Ance wud, aye the waur;* and for that reason, to be dealt with leniently.

But though the question of lucid intervals rarely appears in criminal, it appears very frequently in civil cases, where it may assume a position of much importance. It appears with special frequency in those cases which relate to wills, since by the laws of this, and of nearly all other countries, a person who has been insane can execute a valid testament during what is called a lucid interval.

What, then, is meant by a lucid interval? It may refer to two states:—1*st*, To clearly periodic intervals of lucidity in the course of an attack of insanity; and, 2*dly*, To such remissions of the symptoms as may be regarded in the light of temporary cures. The first would resemble the intermissions in ague; while the second would resemble recurring bronchial attacks. In the first, the insanity is supposed to be merely slumbering—in the second, to be temporarily gone. But is it true that we have any forms of insanity with intervals of lucidity at all exhibiting the periodicity which occurs in ague? My answer to that is, None that I know of. We have a large number of cases, however, in which well-marked remissions occur, which, for the time being, amount almost to a restoration to sanity, but which present themselves at irregular intervals, and are of uncertain duration. The intervals may be, it is true, more or less nearly equal in some instances—so nearly so as to justify our looking for an exacerbation at a particular time—but, notwithstanding this, we have to do here with something quite different from the wonderful periodicity exhibited in ague. These remissions resemble more nearly the intervals between such things as epileptic seizures, or attacks of angina or gout. Even in the best marked cases of what has been called *la folie circulaire*, in which periods of excitement, depression, stupidity, and lucidity succeed each other again and again, there is nothing of the regularity and order which is exhibited in the periodicity of ague. Nor is it more correct to regard in this light those exacerbations of mental disease which coincide with, and are in fact due to, other periodic phenomena, such for instance as the menstrual discharge. In short, the so-called lucid interval resolves itself into a remission or disappearance of the symptoms, which, for the time being, more or less resembles a cure. A patient has a bronchial attack which yields to treatment; but we may know very well from his history, or from the cause of the attack, or from some concomitant, that he is almost certain to have other attacks. We may, perhaps, feel able safely to predict a long succession of them. Such a case, and not a case of ague, illustrates the lucid intervals of insanity. And just as we might have some doubts as to whether we should regard the patient, between the bronchial attacks, as cured, so there may be doubts—doubts of exactly the same character—as to whether these lucid intervals in insanity should, or should not, be regarded as temporary states of cure. "What difference is there," Georget asks, "between a lucid interval and a cure? A patient who every year has an attack of mania disappearing during some months, or has an attack of mania every two or three months, is he cured between the attacks, or has he only lucid intervals? We may admit," he goes on to say, "that a patient who recovers his reason for a month only, to lose it again, and so on, has nothing but lucid intervals; and that he who is well for at least six months of the year is cured, and may recover the rights he has lost. I believe we may even admit also, that an individual who is insane for three quarters of the year, enters in the category of those who have only lucid intervals." This was all the precision that one of our best and clearest writers on the medico-legal aspects of insanity could attain in this matter. It follows, therefore, that in describing a patient as being cured, or as being in a lucid interval, we are using terms arbitrarily chosen, and are not speaking with scientific precision.

Having thus explained what these intervals really mean, I next ask whether the lucidity, which is manifested during them, is ever complete? The answer to this is, that it would be extremely difficult to say that in any of them there is a perfect restoration to reason, while in most the restoration is certainly only partial.

In a great many other diseases, when the attack passes off, the patient is not left where he was before the seizure. This, indeed, may be said to be almost always true when there is a succession of attacks; so it is with insanity—perhaps more so with it than with any other disease, because it involves so delicate and complex an organ as the brain. Even when excitement is gone, and delusions have vanished, and the talk and conduct are rational, and the bodily health seems good, there will generally remain a weakened mental power, and a detectable, but scarcely nameable, something in the operation of the mental faculties, and in the patient's manner, which reveal instability of mental health, and raise apprehensions as to the future.

Dr Combe says—"However calm and rational the patient may appear to be during the lucid intervals, as they are called, and while enjoying the quietude of domestic society, or the limited range of a well-regulated asylum, it must never be supposed that he is in as perfect possession of his senses as if he had never been ill. In ordinary circumstances, and under ordinary excitements, his perceptions may be accurate, and his judgment sound, but a degree of irritability of brain remains behind, which renders him unable to withstand any unusual emotion, any sudden provocation, or any unexpected and pressing emergency."[1]

But may not the restoration to sanity, though not absolute, be sufficiently complete to justify the withdrawal of civil disabilities, and to restore the patient to the free exercise of his civil rights? In a large number of cases I believe that this occurs, and to continue to withhold these rights would be an injustice.

Legrand du Saulle says that there is no alienistic physician who does not know from experience that one or more attacks of insanity may leave, during lucid intervals, a sufficient clearness of mind for the rational execution of a last will and testament.[2]

Foderè says that during a lucid interval a patient may enjoy all his reason, and may act and judge in all respects like other men.[3]

Langer says that when real intermissions occur in a psychosis—that is, when the symptoms which characterize the condition have ceased—we are not authorized to assume, in a judicial point of view, a state of disease. Responsibility and competency therefore return.[4]

It would be easy to multiply such opinions as these.

It is not necessary that the patient should be quite what he was; for, if he had never been worse than he is during such an interval, he never would have lost those rights, the restoration of which he claims. This view of the point should never be lost sight of. Just as persons, between ague fits or bronchial attacks, may be able, though not perfectly well, to resume their ordinary avocations; so persons, between attacks of mental disorder, may so far recover the exercise of their reason as to be able to resume their rights and responsibilities. Without adopting the extreme opinion of D'Aguesseau (1698), that a lucid interval is "not the dawn, which joins night to day, but perfect day itself,"[5] it has been conceded as a fact that there is often a sufficient approach to the perfect day, though dark night may precede and follow it, to make it fair to the individual, and safe for society, that disabilities should be removed during those periods. During the insanity of Charles VI., when a lucid interval occurred, the powers of the regency were suspended, and he resumed his regal authority with great advantage to the kingdom.

It is quite clear from what has been said, that the measure of the restoration in these cases must and does differ greatly. I do not know precisely what the *perfect* day of reason is; but it is certain that patients, who are said to be in lucid intervals, stand at different distances from it. The mental state of a lucid interval is not one which is uniform, or which we can outline with sharpness; for we cannot even define the general states of sanity and insanity. And it must never be forgotten, that we are just as little able to do this with regard to the body as with regard to the mind. Our uncertainties as to the value of mental states may have a greater practical importance, but they have no fuller existence than our uncertainties as to bodily states. It is of importance that this should be borne in mind, so that positive and dogmatic speaking in reference to such matters may be avoided, and difficulties freely acknowledged, where difficulties exist.

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[1] Combe on Mental Derangement, p. 241.

[2] La Folie devant les Tribunaux, p. 159.

[3] Ray's Med. Jur. Edin. 1839, p. 219.

[4] Feuchtersleben, Med. Psych., p. 374.

[5] Legrand du Saulle, op. cit., p. 109.

It follows, I think, that all cases in which the question of lucid intervals is raised must be judged of separately—that is, each case must be considered on its own merits. No two cases will be alike. Each case will have peculiarities, and these may refer either to the actual state of the patient, or to the history of a previous interval.

Law and medicine, then, both admit the existence of the so-called lucid interval—that is, of a marked remission in, amounting to a temporary disappearance of, the symptoms; and both agree that during such intervals there may properly be a resumption of rights and responsibilities. The medical question will relate to the character, the completeness, and the sufficiency of the lucidity; and it will generally be as easy or as difficult to determine this, as to determine when a *cure* should be pronounced, in the sense, that is, of a permanent cure. *Cure* replaces the patient, as a matter of course, *in statu quo ante*, and he is then "treated precisely like any other person of sound mental health."[1] But cures are often declared when no real cure has taken place. Such occurrences present themselves in the experience of every man who is practically engaged in the treatment of insanity. Casper tells the story of a man who called on him immediately after being dismissed as *cured* from an asylum. He found the patient composed, rational, and perfectly clear. Accidentally, towards the close of the interview, the patient unbuttoned his overcoat, when there was seen, on the frock-coat beneath, a star of pasteboard and gilt paper—"the order," he said, with a self-complacent smile, "which he had received on account of his relationship to the Hohenzollerns."

The most complete of cures, in fact, are too often nothing but long and undetermined intervals of lucidity; the tendency to relapse in mental disease being peculiarly great.

To show how vague and undetermined this whole matter is and must be, we have only to ask such questions as these:—Who can tell the exact time when a cure is accomplished? or, Who can tell precisely when an interval of lucidity commences and ends? Do not considerations of expediency and probability always shape our answers?

Hoffbauer was magnificently arbitrary on this subject. He said there were three kinds of lucid intervals—one in which the interval was shorter than, another in which it was equal to, and another in which it was longer than, the attack. In the first of these—those in which the interval is shorter than the attack—he thought disabilities should not be removed. In the cases, again, in which the interval is longer than the attack, he said the patient might be regarded as in the position of a man whose faculties are intact, whose acts are those of a sane man and who should have the same civil rights and responsibilities as other men. The difficulties, he thought, relate only to the cases in which the lucid interval equals the attack in duration, for the reason that the man has not time to return to himself, the succession of attacks and lucid intervals making these last doubtful.

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[1] Casper, op. cit., p. 232.

All this is purely arbitrary; for as things actually happen, we know very well that the lucidity exhibited in a short interval may be much clearer than that exhibited in a long one.

In looking at lucid intervals, however, there are some medical experiences which it is useful to bear in mind, such as these:—

In the case of an idiot, an imbecile, or a confirmed dement, for instance, lucid intervals cannot of course occur, just as there cannot be a temporary, or any other, cessation of lameness in a man whose legs are cut off. Again, if lucid intervals ever occur in the progress of cases of acute dementia, they are of extreme rarity. They are also very exceptional in the states called monomania—that is, in cases exhibiting one or two prominent fixed delusions of long standing.

Again, the mere transition from agitation to calm does not constitute lucidity, for, after excitement has ceased, there may be as much mental derangement as while it lasted.

There occur, in some acute cases, momentary exhibitions of lucidity which are of good omen, and may be the forerunners of convalescence, but these are too short to be of much practical value; yet even during them wise words may be spoken and wise acts done; but it would be inexpedient, as a rule, to deal with these as intervals of lucidity. Fortunately we are not likely to be often asked to do so. If the act of such a patient were held to be valid, the rationality of the act itself would nearly always be the chief proof of the lucidity and competency.

"Little stress," it has been well said, "ought to be laid upon those occasional and uncertain disentanglements of intellect, in which the patient is for a moment only extricated from the labyrinth of his morbid hallucinations."[1] And as little, I think, on instantaneous cures. Personally, I know nothing of those marvellous cases "in which the curtain of melancholy delusion is suddenly withdrawn; where the eye of the mind seems to be couched all at once by a miracle of almighty power."[2]

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[1] Reid on Nervous Affections, p. 318.

[2] Reid, op. cit., p. 320.

We come now to look more closely at the view which the law takes of the so-called lucid interval.

The Roman law openly recognised their value. "If the lunatic," it said, "has recovered his reason, or if he has made his will during a lucid interval, the will is held to be valid." The Code Napoleon does not directly recognise it, but it is so framed as not to exclude it. Art. 90 simply says, "To make a will, it is necessary to be of sound mind;" and the assumption is, that during a lucid interval there is soundness of mind.

The Prussian Code enacts, that "Persons who are only occasionally deprived of the exercise of their reason may make valid preparations for death during a lucid interval;" and I have shown that the Hanoverian law not only recognised these periods of lucidity in civil, but also in criminal cases. The Rhenish Civil Code, however, gives no privilege to the lucid interval, interdicting all who are usually in a state of idiocy, insanity, or mania, even though subject to periodic lucid intervals, and wills made during such intervals, by this code, are not valid.

The English law, again, makes a lunatic responsible, and gives validity to his acts during a lucid interval. Indeed, "all acts done during a lucid interval are considered as those of a person perfectly capable of contracting, managing, and disposing of his affairs at that period, and this rule applies to wills as well as contracts."[1] The lucid interval being proved, the will is as valid as if the testator had never been insane. By such an interval, however, Lord Thurlow is reported to have said, that "he did not mean a cooler moment, an abatement of pain or violence, or of a higher state of torture, a mind relieved from excessive pressure, but an interval in which the mind, having thrown off the disease, had, for the time being, recovered its general habit."

I come now to another aspect of the question:—If a person makes his will before he has been shown to be insane, then it is presumed by the law that he was sane when he made it; and if any one attacks it, he must prove the insanity of the testator. But if he has been shown to be insane before he made the will, then the presumption and the burden of proof change—it is then presumed that, having been insane, he continues to be insane, and the party setting up any instrument after insanity has manifested itself has the burthen of proof cast upon him; he must, in short, show recovery.[2] "If it can be established," said Sir William Wynne, in the case of Cartwright *v.* Cartwright and others, "that the party afflicted habitually by a malady of the mind has intermissions, and if there was an intermission of the disorder at the time of the act, that being proved is sufficient, and the general habitual insanity will not affect it; but the effect of it is this, it inverts the order of proof and of presumption; for, until proof of habitual insanity is made, the presumption is, that the agent, like all human creatures, was rational; but where an habitual insanity in the mind of the person who does the act is established, then the party who would take advantage of the fact of an interval of reason, must prove it."

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[1] Shelford, op. cit., p. 289.

[2] Shelford, op. cit., p. 290.

"There does not appear," he goes on to say, "any authority or law to prove what the length of the lucid interval is to be, whether an hour, a day, or a month; all that is required is, that it should be of sufficient length to do the rational act intended; if it is established that the act done is perfectly proper, and that the party who is alleged to have done it was free from the disorder at the time, that is completely sufficient."

There is another point to which I beg to direct attention. It is this:—In what way does the character of the will affect the establishment of a lucid interval? Shelford says,—"If a will made by a lunatic is rationally drawn up, and the nature of the disorder was such as to afford any reasonable ground to suppose that a lucid interval may have prevailed, the act itself furnishes a very strong presumption of that sound and disposing mind which is necessary to its validity." With reference to the same point, Sir William Wynne observes, that "the strongest and best proof that can arise as to a lucid interval is that which arises from the act itself, which is the thing to be first examined; and if it can be proved and established that it is a rational act rationally done, *that* is sufficient." Brierre de Boismont tells us that, by a decree of the Court of Paris, "the wisdom alone of the act confers on it a right of presumption that it has been done in a lucid interval."[1]

Great weight should, I think, be accorded to the character of the will, and it will certainly not be too much, if we receive it, when it is rational, as very strongly supporting any other evidence of lucidity. It has been said that testaments are mirrors in which the makers of them are pictured, and there is assuredly much truth in this. Whether wise men generally make wise wills or not, it is of a verity that fools generally make foolish wills, when such wills are really their own acts. Therefore, when a will is a rational one, it should be received as strong evidence that its maker possessed a testamentary capacity. We cannot help regarding rational acts as evidence of an ability to act rationally; or, at least, of relevant competency.

I have thus briefly sketched the drift of the law's dealings with lucid intervals in will cases. But the law does not always deal with such states on the same principles. One illustration I shall give, because it is not generally known:—When a witness has had an attack of insanity between the date of an event, and his examination regarding that event, though he be restored to lucidity, his testimony cannot be received—he cannot be examined. In other words, quoting from Hume on Crime (vol. ii. p. 340), a witness is disqualified for giving evidence about any matter which fell under his observation in his season of sound health, if a fit of derangement have succeeded, even though at the time he is required to give evidence he be in a lucid interval, or, for the time being, in a state of perfect mental health. He could make a valid will then, as we have shown; but about any event which happened before the attack, his evidence is of no value. It is difficult to see what has guided lawyers to this conclusion, but it has certainly not been medical experience.

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[1] Legrand du Saulle, op. cit., p. 162.

A case of this kind occurred recently in Inverness, in the trial of Thomas M'Kenzie for assault and robbery. John Scott was cited as a witness, but it was objected that he was disqualified, having been the subject of an attack of insanity between the date of the fact to be proved and the examination. The objection was sustained, though the Medical Superintendent of the Inverness Asylum, under whose care he had been, and still was at the time of the trial, declared him to be then "in a perfectly healthy mental condition," with his "memory not in any way impaired," and "able to give a clear account of anything that happened previous to the attack." In sustaining the objection, the judges admitted the point to be one of difficulty and delicacy. Medical men would have received Scott's evidence without hesitation; but though in this case law and medicine do not agree as to the influence and bearing of lucid intervals, I think I have shown that there is a fair agreement between them as to the value and bearing of lucid intervals in cases which relate to wills.

This concludes the remarks I have to offer on this second part of my subject.

It has been my endeavour in discussing it not to speak too positively, nor to make strong assertions, nor to lay down inflexible rules, but rather so to state the case as to lead to conclusions which are probably sound and just to all concerned. It has been my special wish to leave a clear impression that every case must be looked at separately, and judged of in the light of the whole circumstances. It does not appear to me that the law has any desire to ignore special knowledge in these matters. On the contrary, I think a careful study of the whole body of recorded decisions must leave the conviction, that the law is ready to be guided by medical experience. Medical men, however, have sometimes confounded theory with experience,—a confusion which lawyers have properly resisted, but of which they too in this same matter have not unfrequently been guilty.

In the next paper, I take up the consideration of the medico-legal relations of insanity to will-making in those cases in which the alleged incompetency rests on mere feebleness of mental power.

ARTICLE II.—*Case of Hæmorrhage resulting from an Internal Wound of the Œsophagus treated by Operation.* By THOMAS ANNANDALE, F.R.S.E.; Surgeon to the Edinburgh Infirmary, and Lecturer on Clinical Surgery.

ON the 18th of November 1871, I was asked to meet in consultation Dr Balfour, of Portobello, in regard to the case of Miss J., æt. 52, who had been the subject of hemiplegia (on the left side) for several years.

Three days before my visit, the patient when dining felt a portion of chicken or ham bone lodge in her throat. This accident was followed by great pain and difficulty in attempting to swallow, and a few streaks of blood were noticed to pass by the mouth. The day after the accident a small swelling formed over the inner border of the left sterno-mastoid muscle, about the middle of the neck. The pain and difficulty in swallowing continued unabated for the next two days, and the swelling in the neck slightly increased, and became tender to the touch.

On examining the patient, I found a small circumscribed inflammatory swelling, the size of half a small walnut, in the region of the neck already referred to. The swelling was hard, and no fluctuation in it could be detected. An ivory-headed probang being passed down the œsophagus, struck against some hard substance on the left side immediately opposite the swelling in the neck. The probang having been withdrawn, a pair of long œsophageal forceps was passed down to the site of the body, but the latter could no longer be felt. A second introduction of the probang led to the same result, for, after a very careful search, no foreign body could be detected. The patient was then asked to swallow some bread and to drink some water, when she at once declared that the pain and difficulty in swallowing were gone, and that she no longer felt anything in her throat.

On visiting her next day with Dr Balfour, it was found that she continued free from her old symptoms, and only suffered from a *slight soreness* in swallowing. The swelling in the neck was decidedly less prominent. As no further special surgical treatment appeared necessary, I ceased my attendance, and heard no word of the case until the 26th, seven days after my last visit, when I received an urgent message to see the patient. On my arrival Dr Balfour informed me that the patient's progress had been perfectly satisfactory up to early that morning, when hæmorrhage had suddenly taken place from the mouth. The blood brought up was arterial and unmixed, except with a little saliva and mucus. The swelling in the neck had disappeared, but there was a slight fulness remaining in its situation. A mixture of gallic and sulphuric acids had been given, and the bleeding had stayed, but the patient was pale and weak. It was decided to continue the acid mixture, and to give ice and iced milk to swallow.

In the afternoon, Dr G. Keith of Edinburgh, at the request of the patient's friends, joined my colleague and myself in consultation, and as the bleeding had not returned, the continuation of the treatment was recommended. About nine o'clock the same evening, Dr Keith and myself were requested to meet Dr Balfour again, as the hæmorrhage had returned more actively than before. The appearance of our patient was truly alarming. She was lying in bed, pale, and exhausted, and bringing up every few moments large mouthfuls of pure arterial blood. Unless something was done at once to stay the bleeding, it was evident that the case was hopeless, and therefore, at the brief consultation we held, I suggested the justifiability—under the circumstances—of cutting into the neck, with the hope of discovering and removing the source of the hæmorrhage, which appeared to me to be connected with the lodgement of the foreign body in the œsophagus.

My colleagues having agreed to the proposal, the patient was put under the influence of an anæsthetic (a mixture of chloroform and ether). I then made an incision on the left side of the neck as if for tying the common carotid below the omo-hyoid muscle, and having exposed this artery a little below this muscle, I passed round it a loose ligature of catgut, intending it to be a ligature of reserve, by means of which the artery could be secured if necessary. A careful dissection was then made to the inner side of the artery so as to lay bare the œsophagus, with the result of exposing a wound of this canal. The wound was a quarter of an inch in length, situated on the left side, and passed completely through the walls of the canal. Its edges were somewhat ragged in appearance, and a continuous oozing of arterial blood was taking place from them. A very fetid odour was also noticed to come from the wound. A probe passed into the wound, and moved up and down in the œsophagus, did not detect any foreign body. On searching more carefully for the source of the hæmorrhage, a small branch of an artery was found entering the œsophagus close to the wound. This vessel passed upwards from underneath the carotid, and was, from its situation and direction, considered to be a branch of the inferior thyroid artery. A ligature passed round this small branch by means of an aneurism needle and secured, at once stayed the bleeding. The margins of the wound in the œsophagus having been freely touched with the tincture of the muriate of iron for antiseptic effects, the edges of the wound in the neck were brought together with sutures.

The morning after the operation, the patient was fed with a tube introduced by the mouth and passed down the œsophagus below the situation of the wound. She had passed a quiet night, and there had been no return of the bleeding. The temporary ligature round the carotid was removed. For the next four days the patient's progress was most satisfactory. There was no return of the bleeding, and the wound was healing well. She was fed by means of the tube regularly twice a day.

On December 2d, the wound presented an unhealthy appearance, and there were signs of sloughing of its edges, which had somewhat separated since last account. A little bleeding had taken place from the wound, but the application of the muriate of iron checked it.

On December 4th, the patient's general symptoms were not promising; the wound also presented a sloughing appearance in its whole extent. A little more bleeding took place from the wound, but was stayed by a compress steeped in the muriate of iron.

Dec. 5th.—The patient's strength has rapidly diminished since yesterday, and she is fast sinking. Died the same day. No post-mortem examination was allowed.

Remarks.—In connexion with this case, I would briefly remark—(1*st*) On its nature; (2*d*) On the operative treatment adopted; (3*d*) On its result.

1*st.* The history of the case, the detection of the foreign body by means of the probang, and the condition determined at the operation, are, I think, sufficient proof that a sharp fragment of bone had lodged in the œsophagus and wounded its walls. This wound had been followed by ulceration, which, in its progress, had involved the arterial branch and caused the hæmorrhage. It seems probable that my first introduction of the probang displaced the bone, and that this accounted for the relief of the symptoms and the disappearance of the inflammatory swelling in the neck. Had the bone remained in its original situation, an abscess pointing externally would have been the result. From the fact that no difficulty in swallowing was experienced after the introduction of the probang, it is likely that the bone passed down into the stomach.

2*d.* Had I not possessed a clear history of this case, and had I not also distinctly felt the bone, and ascertained its position, operative interference would scarcely have been justifiable; for although the blood was evidently coming from the pharynx or œsophagus, it was impossible to be certain as to its exact source.

As, however, the patient was dying from apparently unrestrainable hæmorrhage, and as there seemed to me a great probability that the bleeding was connected with the injured portion of the œsophagus, I undertook the operation with the hope of finding and removing the cause which was acting so fatally. Under the peculiar circumstances of the operation, I thought it a safe plan to first expose the carotid artery below the supposed site of the bleeding, and place round it a loose ligature; for it was likely to be this vessel, or some of its branches, which was wounded. This proceeding was not attended with any special danger, and if any sudden gush of arterial hæmorrhage took place in the progress of my further dissection, I expected to be able at once to check it by securing the ligature. The discovery that the wounded vessel was not a branch of the carotid but of the subclavian artery, is an excellent, but, at the same time, rare illustration of the important principle in the treatment of wounded arteries, namely, to search for the bleeding point itself, and secure it if possible. Ligature of the carotid artery in this case could have had no influence in restraining the hæmorrhage from the bleeding vessel.

3d. The progress of the case for the first few days was all that could be desired, and had the local (hemiplegic) and general condition of the patient been more satisfactory, a favourable result might reasonably have been anticipated. The hæmorrhage from the mouth never returned after the operation, and although some bleeding took place from the wound after it assumed an unhealthy appearance, it came from the sloughing surfaces of the wound, and not from the original site of the œsophageal hæmorrhage.

In conclusion, I may be permitted to acknowledge the valuable assistance and support which I received from Drs Balfour and Keith in carrying out the treatment of this most anxious case. Although sincerely regretting the fatal termination of the case, we felt, and I think with some justice, that our treatment had saved the patient's life at the time, and prolonged it for several days.

ARTICLE III.—*Notes from Practice.* By JOHN BALFOUR, L.R.C.S.E., I.G., Leven.

Vaccination, Primary, in the Adult.—On the 18th January I was waited on by John G., aged 22, who requested vaccination, stating that the operation had not been performed during youth in consequence of delicacy. As he was in good health, I at once acceded to his request, asking him to return and show himself on the eighth day. When that time had come round, fearing that he might forget his promise, I hunted him up at his work, and put him in mind of it; but, notwithstanding, he failed to show himself. On the evening of the twelfth day, however, he came to my surgery, stating that, from the ninth day up to the present time, he had been quite unable to work, not so much from the arm (though that had been painful) as from general discomfort, loss of appetite, etc.—in short, from slight fever. He is now, however, better. The vaccination had taken well, with considerable swelling and full inflammation, and a good areola. The two latter are just fading away, the vesicles have been full-sized, and are now blackening into crusts.

Re-vaccination in a Lady aged 40.—Was vaccinated in India as a child, again in England at the age of eleven,—both times successfully,—several times since without result. On the arms are two small but distinct cicatrices from the first, and a large, very indistinct one from the second vaccination. On the 29th January, I performed vaccination from a fresh arm: the punctures felt hot and stinging for the rest of the day. Second day, vesicles forming slight surrounding inflammation; sick, feverish, and good for nothing all day. Vesicles increased to the sixth day without pain; on that day, however, was again slightly feverish, the vesicles nearly the size of a threepenny-piece, flat, with edges sloping into the skin; inflammation extending to an inch and a half round each vesicle, and a slight attempt at an areola. On the eighth day the inflammation was almost gone, and crusts forming; on the tenth day the crusts fell off.

Re-vaccination, Bad Effects from.—A gentleman of middle age, with a remarkably good cicatrix—large, clear, and well foveated—allowed himself to be re-vaccinated by a young acquaintance. The operation was performed on the upper part of the left forearm. He left home during the afternoon, and missed the last train home. During the night the arm became very painful, and next morning he described the vaccination as being as large as a pigeon's egg, and himself in a very uncomfortable state. Being Sunday, he could not get home, but returned on Monday afternoon, when I at once saw him. I found my patient in a very unpleasant state,—the tongue loaded, pulse about 130, skin very hot and dry, and the whole of the left forearm erysipelatous, much swollen, and with a very angry appearance. He was at once put under tinct. ferri mur. in full and frequent doses, the arm put up with lead-and-opium wash, hot, and means taken to act freely on the bowels and liver. The erysipelas after this did not spread, but it was Thursday morning before there was any decided improvement. On that day the pulse came down a good deal, the arm was less tense, and the colour paler; the urine, too, which at first was very scanty, and deposited lithic acid, became copious and normal. On Monday, the tenth day from the vaccination, fluid was fairly made out burrowing under the skin, and, by an opening in the most suitable part, between six and seven ounces of matter, purulent, reddish, and rather thin, were withdrawn: this gave great relief. Arm now rubbed over with a weak solution of carbolic acid and oil, and rolled up in wadding. Three days after, more fluid was discovered farther forward, and by a second opening about a couple more ounces of matter similar to the first were evacuated. Since that all has gone on well: the arm is now of normal size, sound, so far as I can make out, the openings healing, and my patient gaining daily in health and strength.

Late or Delayed Cowpox.—These are occasionally met with, the disease running a perfectly normal course, except that it may be from one to three or even more days later in reaching every stage than should have been the case. I think the general feeling is to consider such cases successful, and this has been my own practice. Last autumn, I had the following opportunity of testing the correctness of this view:—On the 3d December I vaccinated E. K., of Methil. Four days afterwards, or on the fifth day, in passing through the village, I was told by her mother that the arm "had not held." As the child was close on six months of age, it was an object to repeat the vaccination at an early date; so, three days afterwards, I took up some fresh matter. On looking at her arm, I found one of the pocks holding well, but only equal in size and appearance to what it should have been on the fifth day. I at once determined to vaccinate again, and so, by means of Bryce's test, to try the efficacy of the late pock. On returning four days after, I found the original pock fully developed, with a fine areola forming, and the two later ones equal (very nearly) in size to the first, and also with well-developed areolas round them.

I do not think many remarks on these cases can be required. The first case was interesting to me as showing the amount of feverish suffering in an adult when vaccinated for the first time; the second, as it appeared a good typical case of re-vaccination which I had the opportunity of carefully watching; the third points out the risk occasionally incurred when the person to be vaccinated is not in good health; and the fourth will give increased confidence to the opinion that a late pock, which otherwise runs its course normally, may be accepted as an efficient protection against smallpox.

ARTICLE IV.—*Case of Strychnia-poisoning, treated by the Administration of Chloral Hydrate.* By ANGUS MACDONALD, M.D.

MR J. C., aged about 32, by profession a teacher, and residing in Norton Place, Edinburgh, had been, for one or two months back, in the habit of taking five drops, three times a day, of the liquor strychniæ of the British Pharmacopœia, prescribed by me with the view of benefiting a chronic bronchitic affection from which he suffered somewhat. His general health, however, was excellent, and he had hitherto experienced no disagreeable results from the continued use of the medicine. On the morning of Monday the 30th of January 1872, he took his usual dose before breakfast, at 8 o'clock A.M., but thought he felt the taste of the medicine more than usually bitter, and was not sure but he might have taken eight drops, but did not think he had exceeded that quantity. He immediately afterwards took breakfast, and left home about twenty to twenty-five minutes past 8 o'clock, without feeling in any way ill. When he got to the middle of the London Road, about a quarter of a mile from his home, he felt giddy, and experienced a tendency to stagger. He hurried along to Elm Row, another quarter of a mile further, and, entering the first shop he came to, asked the shopkeeper to send for a cab; and after being helped into it, drove straight to my house in Northumberland Street, where he arrived at a quarter to 9 o'clock.

During the period between the first seizure and the time I first saw him, the patient had been getting gradually worse and worse, and I found him unable to get out of the cab, as his lower limbs were rigidly extended, his neck and trunk extended, his occiput pushed forcibly against the back of the cab. His intellect was perfectly clear, and he now briefly explained what had happened to him; but as any attempt at flexion of the body brought on severe tetanic spasms, I had to get the assistance of the cabman to turn him lengthwise across the cab; and having thus got him out of the vehicle, we carried him into my consulting-room. He looked exceedingly anxious, and complained of severe pain, like the effect of an electric shock, every time the spasms came on, which at this time recurred at intervals of less than a minute.

I at once proceeded to administer chloroform by inhalation, and at the same time sent my servant to the nearest druggist's for a solution of the hydrate of chloral of definite strength. The chloroform gave immediate relief, but it was only of a temporary character, for after three or four minutes the tetanic spasms were nearly as bad as before he was removed from the cab. About nine o'clock I administered (with considerable difficulty, as every attempt at swallowing aggravated the tendency to spasm) about thirty grains of the chloral hydrate. After an interval of from five to seven minutes, perceiving that the spasms, though somewhat less frequent and less severe, were still very distressing, I administered other twenty grains of the hydrate. Shortly after this the spasms diminished rapidly both in frequency and in severity, succeeding each other at intervals of two, three, and five minutes respectively, until about half-past 9 o'clock, when they ceased altogether. The patient shortly afterwards fell into a sound sleep of fifteen minutes' duration, from which he awoke, expressing himself as feeling quite well, with the sole exception of a certain amount of giddiness. He was put to bed about 10 o'clock and slept till 12.30 mid-day, after which he awoke quite well, and was able to be driven home. No injurious results followed.

My principal reason for recording this interesting case is, the evidence it bears in favour of the physiologically antagonistic action lately demonstrated by Drs Bennett and M'Kendrick to be possessed by chloral hydrate over strychnia, and of its consequent value therapeutically as an antidote in cases of strychnia-poisoning. It had been previously shown by Liebreich that the antidote in cases of poisoning from hydrate of chloral was strychnia, so that we have thus two powerful poisons proved to be mutually self-destructive. In the present instance, exception cannot be taken to the efficacy of the drug as an antidote in man because it has only been tried on the lower animals; and, as this objection is often of real force and importance, it behoves the medical practitioner, in the interest of therapeutical science, to record every accident of this kind that falls within his experience. The dose taken was so small, even supposing my patient had considerably exceeded the eight drops, which he himself considered to be the very most he had taken, that fatal results could scarcely have been deemed possible, though the symptoms were distressing, severe, and even alarming. But the mitigation of these symptoms, which so markedly took place, so soon as the chloral had had time to be absorbed, and their subsequent rapid complete disappearance, though chloroform had previously failed to give more than temporary relief, prove that its beneficial action is not illusory, but real.

Besides the direct effect of the dose of strychnia taken by my patient on the morning of the 30th of January, we have doubtless present another important, perhaps the most important, element in the line of causation of symptoms, that is, the cumulative property of strychnia, when given for a length of time. Only the effects of continued use could explain the alarming symptoms arising from what could have been at most only a large medicinal dose, and not in any degree a poisonous dose, according to the ordinary acceptation of the term. The fact of the existence of this cumulative action of strychnia, combined with the great severity of symptoms, made me at first considerably apprehensive about my patient's condition, even though he assured me that the dose could not be much over eight drops.

The case, besides, affords an argument for the exercise of great caution in the administration of strychnia, so as to avoid the production of the disagreeable results of its cumulative action on the one hand, and of an overdose on the other. The system of administering powerful medicines, such as liquor arsenicalis or liquor strychniæ, either by prescribing so many drops for the patient to pour out for himself, or by having them mixed with so much water, and then measured out in such uncertain quantities as teaspoonfuls, etc., though very common, is very unscientific, and extremely dangerous. Patients requiring such medicines should be urgently recommended to provide themselves with glass measures of definite capacity, which can always be had at a trifling cost.

ARTICLE V.—*A Concise History of the Royal Infirmary, Edinburgh:* Being an Address read before the Royal Medical Society of Edinburgh, 1st Dec. 1871, by EDWARD WILLIS WAY, M.B., on being elected President.

GENTLEMEN,—Before I enter upon the subject of my address this evening, allow me to thank you most sincerely for the honourable position in which you have placed me, by electing me to preside over you. When I look back at the list of your former presidents, and see the names of so many distinguished men, I cannot but feel my own unworthiness to succeed such illustrious predecessors. But

I trust the responsibility of the post may itself prove such a stimulus to exertion, that I may, in the future, not only be no discredit to this grand old Society, but may even be able to contribute, though it may be humbly, to its reputation.

You can little appreciate, Gentlemen, the peculiar feelings experienced by a young colonist—a citizen of a new country—in coming to an old land, with its centuries of history. Before I arrived in Great Britain I had never had an opportunity of seeing buildings more than thirty years old, and even these were rare; for, of the houses erected in the early days of my colony, which were constucted of wood, not more than two or three remained when I left, and they used to be objects of veneration on account of their great antiquity. If you bear this in mind, you may understand the interest that I must feel in old places, old scenes, and old histories. Often is it that I think of these matters in regard to that great centre of medical work, the space of ground now occupied by the Royal Infirmary. I think of the old city wall built in the anxious times that followed the battle of Flodden, part of which still stands as the boundary wall of our Infirmary on the south. I think of the time when, near the site of the Medical House, or the University, stood the famous Kirk o' Field in which Darnley was so cruelly murdered. And I think of all the changes that have since intervened—the building of the Infirmary, the active medical work of the old "Surgeons' Square," with its Surgeons' Hall, now a small-pox hospital, the old High School, now part of the surgical hospital, and of the original hall of this ancient Society, now demolished. And it seems to me that I cannot do better, in my inaugural address from this chair, than give you a few results of my reading as to the place, and as to some of the men, that have been important in its history; all the more that, as the Surgeons' Hall has been transferred to a new site, as our buildings have also been removed, and as the High School is no longer what it was of old, so now the old Infirmary itself is doomed to pass away, and in a few years all will be changed.

I shall mainly speak of the development of the Infirmary. It is curious to trace its origin and earlier progress.

It appears that the city of Edinburgh, long before the foundation of the Infirmary, had contributed largely towards the support of the poor, and had appointed a *surgeon* and a *physician* to attend those labouring under any illness or accident. But the extent of the operations of this charity was somewhat limited, for only the "freemen" of the city, or, in special cases, those who had long resided within its walls, were entitled to receive benefit, so that the many hundreds who lived beyond the city bounds were left totally unprovided for.

The want of some public institution in which the poor might have their ailments attended to, and their sufferings alleviated, must have been strongly felt by persons endowed with charitable and benevolent feelings; but it was not till the year 1721 that an appeal was published, pointing out the need of such a charity, and the benefits that would accrue from its foundation. Little success, however, attended this benevolent project, and it was laid aside, happily only temporarily, for in 1725 we find the Royal College of Physicians—be it said to the honour of that body—again bringing the matter before the public. At that time the Scottish Fishery Company was about to be dissolved, and the College of Physicians, obtaining from them a considerable portion of their stock for the purpose of founding an infirmary for the sick, at once started a subscription, heading the list themselves, at the same time engaging to attend the patients without any remuneration. The College of Surgeons joined most heartily in the undertaking. The subscriptions flowed in freely, and as a further inducement for people to give, it was made a condition that the sum of £2000 should be raised before a certain day; but, owing to the zeal and activity displayed by those engaged in promoting this noble work, that sum was exceeded long before the time. A meeting of the subscribers was now called by the College of Physicians, and the contributors thus assembled nominated twelve of their number to further the object under consideration, and to prepare a plan for the erection of an infirmary. A petition was also laid before the Assembly of the Church of Scotland, asking that subscriptions might be collected in all its churches, and, according to Maitland, in his "History of Edinburgh," "the contribution was earnestly and strenuously recommended by the Assembly in their Act of the 11th May 1728, and a copy thereof sent to the incumbents of the several parishes throughout Scotland; yet such was the amazing indolence, laziness, and obduration of the said incumbents, to their eternal reproach, that though this great and pious design was calculated for the relief and benefit of the greatest and most moving objects upon earth, few of them concerned themselves in this truly good and Christian work."

Notwithstanding this want of sympathy on the part of the clergy, money was sent from all quarters, and in 1728 another meeting of the contributors was called, at which it was determined to open at once a temporary hospital. Accordingly, a small house was taken and prepared for the reception of patients; and at the end of one year I find the total number of patients admitted amounted to 35, of whom 19 were cured, 5 were dismissed in process of cure, 5 discharged as incurable or for irregularities, and 5 remained in the house, there being only *one* death. Whether a post-mortem examination was made on this case or not, I have no means of ascertaining, but it is to be hoped that the most was made of this solitary opportunity of acquiring practical pathological information. The working of this temporary hospital seems to have given great satisfaction—the low death-rate in the first year possibly contributing towards it!—and the funds in hand went on increasing till, in the year 1738, they amounted to £5000, when the foundation-stone of the eastern end of the building now known as the Medical House was laid. Two years previously a royal charter was granted, since which time the institution has been known as the "Royal Infirmary of Edinburgh." The first intention of the contributors was to erect only the eastern half of the building; but the encouragement they had received induced them, on the completion of this portion (which was opened to patients in 1741), to proceed at once with the building of the remainder, and accordingly the whole house was completed in 1745. There are two names which are inseparably connected with the birth and infancy of our Infirmary. You must all have noticed, in the vestibule of the Infirmary, a bust, and below it you will find this inscription, written by the historian Robertson,—"George Drummond, to whom this country is indebted for all the benefits which it derives from the Royal Infirmary."

George Drummond was particularly energetic in the foundation of the institution; he subscribed largely himself, and laboured unceasingly to induce others to do the same. But this was not all; we find him engaged actively in superintending the building operations. In Bower's "History of the University of Edinburgh," I find the following, which I consider worth extracting:—

"Messrs Drummond and Monro were appointed the 'building committee.' The money contributed, and with which the work was begun, was soon expended, but perhaps the alacrity and hearty co-operation with which this laudable enterprise was carried on, is without a parallel in the history of any charitable foundation. Materials for the building, of every description, were contributed in small quantities by those who had it not in their power to advance money; and even the common workmen rivalled each other in frequently giving their labour gratis; and, instead of repining, cheerfully submitted to the inconvenience they suffered from their wages being sometimes not regularly paid, such confidence had they in common with all ranks in the talents, integrity, and generosity of these two gentlemen. They uniformly paid the workmen themselves, and permitted no avocation whatever to interfere with what they esteemed so imperious a duty; and their presence, combined with their engaging manners to all employed about the work, had the effect of accelerating its progress in the most remarkable manner."

But we, as students in this University, have cause to revere the memory of Drummond for other benefits besides those which we enjoy from the practice of the Infirmary. It was he who was instrumental in the establishment of five of our professorships, four of these being in the Medical Faculty, viz., those of Chemistry, Theory of Physic (now called the Institutes of Medicine), the Practice of Physic, and Midwifery, the fifth being that of Rhetoric and English Literature. Besides those we have already seen, his many labours for the improvement of this city are too numerous for me to mention. I cannot, however, refrain from pointing out that the grand addition to this city, made by the building of the New Town, was due chiefly to his exertions. Somerville, in his "Life and Times," narrates a circumstance bearing on this point worth quoting; they were standing at a window overlooking the North Loch (now known as Princes Street Gardens), beyond which were the fields called Barefoot's Parks (now the New Town). "Look at these fields," said Provost Drummond; "you, Mr Somerville, are a young man, and may probably live, though I will not, to see all these fields covered with houses forming a splendid and magnificent city. To the accomplishment of this nothing more is necessary than draining the North Loch, and providing a proper access from the Old Town. I have never lost sight of this object since the year 1725, when I was first elected Provost. I have met with much opposition, and encountered many difficulties which have retarded success, but I believe that they are at last surmounted, and that this great work will soon be carried into effect." How fully indeed have these utterances been verified!

Drummond's great coadjutor was the famous Alexander Monro *primus*. We shall speak afterwards of this illustrious man.

When the hospital was open for the reception of patients, the Managers very wisely—foreseeing the advantages to be derived from the admission of the students to the practice of the hospital, not merely for the purpose of improving their education, but as a substantial means of increasing the revenue of the institution—permitted them free access on the payment of moderate fees; and it was not very long after, that the system of clinical lectures was introduced. The honour of this advance in medical teaching appears to be due to Dr John Rutherford (the grandfather—through his daughter, Anne Rutherford—of Sir Walter Scott), who was at that time Professor of the Practice of Physic. The history of our Society informs us that, before this, he had encouraged his pupils to bring patients to him on Saturday, when, after inquiring into their complaints, he prescribed for them in the presence of his class. Appreciating the success that resulted from this method of instruction, he suggested to the Managers that they should allow him to give clinical lectures in the Infirmary; and they not only approved of the suggestion, but placed two of their wards at his disposal, for such cases as might prove interesting and instructive from a clinical point of view. This was the origin of our "clinical wards" and "clinical lectures," which, therefore, date from 1748. The next year, the Managers extended the privilege of giving these lectures to the other medical professors; and it was then that Monro introduced this mode of teaching into the surgical department. Monro laboured most zealously to forward the education of his pupils, and the fame of this University is, in great measure, due to his energy in the cause of science. We have already seen how actively he was engaged in the building of the Infirmary,—we now not only find him, as the Professor of Anatomy, teaching with the greatest success, and thus attracting to this University students from all parts of the world, but we also see him, though engaged as a professor, as a manager, as a surgeon, as a clinical lecturer, yet finding time to unfold to his hearers the treasures of his pathological experience. We are told that "he personally attended the opening of every body, and not only dictated an accurate report of the dissection, but, with nice discrimination, contrasted the diseased and sound state of every organ."

You must pardon me if I introduce to your notice another great man, intimately connected with the Infirmary in the capacity of a clinical professor. I allude to William Cullen. You will remember that, in the year 1748, permission was granted to the medical professors to deliver clinical lectures; but only Monro and Rutherford appear to have availed themselves of the privilege. But, as soon as Cullen was appointed Professor of Chemistry, he began also to deliver a clinical course, and he soon acquired a great reputation in this branch of medical teaching. He also appears to have taken an unusual interest in his pupils, employing every means to become personally acquainted with them, and, in many cases, acting towards them with the greatest kindness. Dr Aiken, a pupil of Cullen's, remarks,—"He was cordially attentive to their interests, admitted them freely to his house, conversed with them on the most familiar terms, solved their doubts and difficulties, gave them the use of his library, and in every way treated them with the respect of a friend and the regard of a parent." I must not omit another point, which ought to induce us to respect his memory, and that is,—it was he who introduced the generous principle of refusing fees from students for attendance in their illnesses: he would never receive a fee in such a case, and his example has ever since been followed by his successors. During the first few years of the existence of the Infirmary, the number of beds occupied amounted to about 40, but, as funds accumulated, this number was increased soon after to 60, and in 1770 to 80; besides which, beds were allotted to soldiers, who were paid for by the Government, and to servant-girls, for whom a ward—now known as No. XII.—had been furnished by a public subscription in 1755, thus making altogether about 130 or 140 beds. Three or four years later, the other wards were furnished, and the number of beds then occupied was about 200. In the earlier days the resident medical staff consisted of one clerk. Amongst other duties, he had to take reports of the cases. This was done in a journal which used to be moved about the wards on castors during the visit of the physician. The method of case-taking was peculiar, and is well reported in a letter quoted by Maitland. It says:—"Each page of the journal was divided into seventeen columns, containing a diary of the cases of the several patients, and various appearances of their distempers while under cure, the names whereof are placed at the heads of the several columns, as followeth: The 1st contains the dates of the year, month, and day; the 2d the number of the bed wherein the patient lies; 3d, operation of the medicines; 4th, intervening symptoms; 5th, pulse; 6th, thirst; 7th, appetite; 8th, spittle; 9th, tongue; 10th, sweat; 11th, urine; 12th, fæces; 13th, ordinary symptoms; 14th, supervening symptoms; 15th, food; 16th, drink; 17th, medicines."

There was also a ledger, in which every case had one or more pages allotted to it. In this the clerk had to enter an exact description of the patient's case, dictated to him by the physician, and to this to add the daily reports taken in the journal. The students used to hear and see all the cases examined by the physician; but, in addition to this, "once a week the whole practice of the hospital is read leisurely by the clerk to the whole of the students in the operating-room, to give them an opportunity of taking notes of every cure they think worth while; and, further, he hath orders to give them full copies of every cure they call for, upon their paying a trifle for writing it out for them." So that the office of clerk, or what we now dignify by the name of resident-physician, in those days appears to have been no sinecure.

Here is an old regulation affecting the students:—"Students who attend the physicians during their prescriptions are to study a composed and decent carriage; are not then to stroll about in the wards, converse together, stand upon benches, beds, or do anything that may be disturbing to the physician, clerk, or patients."

It appears that the matron, in the absence of the surgeon, was instructed to admit patients,—a regulation which, in these days of female doctors, might probably, in the event of a vacancy, cause a medical education to be a recommendation.

I find it was in the year 1751 that the first ordinary physicians were appointed. These were Dr David Clerk and Dr Colin Drummond, and each of these received a salary of £30 per annum—a sum afterwards increased to £70—for their services. Before this, the Fellows of the Royal College of Physicians in rotation had regularly visited the medical cases, except those in the clinical wards. About fourteen years later, four ordinary surgeons were similarly appointed, to have entire charge of the surgical department, which was confined to the wards on the third floor, the two western ones of which, as Dr Grainger Stewart's resident-physician, I lately had the charge. The ward now known as No. XVIII. was then the operating theatre. The wards on the second and third floors were devoted to medical cases; and in the attic was a small one for females called the "salivating ward," the use of which is too obvious to demand explanation; and another was used as a maternity hospital.

You have doubtless all noticed the cells leading into the passages on the ground floor. These were originally built for the reception of lunatics, but on the opening of the Morningside Asylum their use was no longer necessary. The foundation of that Asylum was chiefly due to the instrumentality of a former member of this Society, who presided for six sessions at its meetings,—Andrew Duncan, senior, a distinguished Professor in the University, who worked enthusiastically in behalf of our Society, and who, we are told, never hesitated to declare that he considered it an essential part of the Medical School of Edinburgh. The building of our old Hall in Surgeons' Square was in great part due to his zeal and exertions. Before this was erected, our Society used, from its earliest days, to meet in two rooms placed at its disposal by the liberality of the Managers of the Infirmary. The expense thus saved permitted the accumulation of a considerable library, which has steadily gone on increasing, and is now one of the finest medical libraries in the world.

Thus, Gentlemen, have I for a few moments lifted up the dark veil of the past, and given you an insight into the earliest times of our Infirmary. It would be easy for me to go on,—the past hundred years is rich in medical history,—but time will not permit. It is wonderful, though, to think how the fame of the work done in that little patch of ground occupied by the Infirmary has sounded through the world. In Australia I learned to venerate the School of Medicine of Edinburgh. When I went to Guy's Hospital and entered upon my studies within its historic walls, I still felt that higher traditions clung about the grand old School of the North; and when at length I came hither, I saw an earnestness of work and a thoroughness of teaching which made me feel that the ancient reputation was not to be dimmed by the work of to-day. And, let me add, not the least among the attractions of this School I found this venerable Society, with its noble hall, its magnificent library, and, above all, its roll containing so many illustrious names. Happy did I feel when you permitted me to inscribe my name as member; and need I say, Gentlemen, that I esteem it the proudest honour of my life to be its President.

ARTICLE VI.—*Notes of a Case of Ligature of the Subclavian Artery under somewhat unusual Circumstances.* By JOSEPH BELL, F.R.C.S.

(*Read before the Medico-Chirurgical Society of Edinburgh*, 21*st February* 1871.)

ON the 5th of June 1871, I was asked by my friend, Dr George Leith of Comrie, to see with him a young woman, æt. 24, who had a deep-seated abscess in her axilla and in front of chest. Dr Leith suspected dead bone, so asked me to come prepared to remove it if necessary.

State of Patient.—Patient was in a state of advanced hectic, lying on her back, sunk down in the bed, sweating profusely, and with a harsh, dry tongue, and a very feeble pulse, over 120, quick and thready. She was in the last stage of anæmia; the lips almost colourless, and cheeks white, with a faint red spot. An excessively fetid and profuse sero-sanguineous discharge, soaking the bed-clothes, was oozing from several small apertures in the axilla and below edge of pectoralis major of left side. One large purple spot below centre of left clavicle showed where the skin was strained and on the point of bursting. The left arm was firmly held to the side, from which she had not allowed it to be moved for some weeks, partly from a dread of pain, but chiefly from a feeling of which she told us, that something would burst if she was made to move it. The muscles in front of axilla were stiff and fixed. She was excessively timid, and could not bear the slightest movement of the bed, or allow us to examine her in any way before she was put under chloroform.

History.—Early in the spring she suffered from a poisoned wound of one of the fingers of the left hand, and, in connexion with this, an abscess (probably in its origin glandular) formed in the axilla of the same side. This burrowed most extensively below the fascia, but especially upwards in the direction of the clavicle. The abscess was opened by Dr Leith on the 25th of March, and about two teaspoonfuls of pus evacuated. After considerable discharge, aided by poulticing, the wound began to heal up, but deep-seated suppuration continued to burrow in all directions, with no tendency to healing of the deeper parts. After this, Dr Gairdner of Crieff saw her in consultation, when hectic was beginning to show itself. He inserted tents into the sinuses, in the hope of enlarging them and giving more free vent to the discharge. This had the desired effect, but no tendency to dry up manifested itself; the constitution, never very strong, was fairly sapped; the profuse discharge being aided by night sweats, a high degree of fever, want of appetite and sleep. A still more alarming symptom had begun about a fortnight before I saw her, in the appearance of arterial hæmorrhage, in small quantity, but quite distinctly arterial, every time the wound was dressed.

On seeing the condition and hearing the history, I must say I felt almost hopeless of any good result in interference with the case, but determined to probe the wounds to find if any necrosed bone from the ribs or disease of the shoulder-joint could explain and account for the symptoms. This, however, she could not stand without chloroform, which Dr Leith administered. When she was fairly under, we raised her very gently from the hollow in which she was lying, and got her to the edge of the bed, and pulled the bed to the window, which, fortunately, gave a most excellent light. The mere movement was at once followed by smart arterial hæmorrhage from all the wounds, florid blood in full jets—not mere oozing, but distinct jets nearly an inch in height. This induced me to lay out everything necessary to tie a considerable vessel, fortunately including an aneurism-needle. I then introduced a probe into the lower wound; the arterial hæmorrhage increased, and it became still more marked when Dr Leith raised the arm slightly from its cramped position close to the side. Getting her fully under chloroform, I passed a probe-pointed bistoury into the lower sinus just under the edge of the pectoralis major, and enlarged it sufficiently to admit my forefinger, trusting by it to discover whence the bleeding proceeded, and to find out the condition of the ribs. The hollow was full of fresh warm blood coming from above, and the upper purple thin skin was becoming actually distended by it. It was obvious that, if we wished to save the patient's life, and escape the credit of killing her, though as yet we had done nothing but raise her arm and probe the wound, we must not delay. I, with Dr Leith's concurrence, with a free incision divided, first, the skin over the pectoralis major, then the muscle itself, and then the pectoralis minor, exposing the whole course of the artery. This was done with great rapidity and ease, as the muscles had been fairly dissected out already by the suppuration, and retracted with great rapidity as the knife cut the tense and stretched fibres. I now had a great gaping wound from the clavicle to the posterior fold of axilla, and saw the source of the bleeding at once in a rent in the subclavian artery itself, about as large as a threepenny-piece. This had evidently been a mere slit with ragged edges at first when the arm lay at the side, but the movement of the patient, and particularly the raising of the arm, had made the slit into a great transverse gash, from which the blood was pouring in a most terrifying stream. Of course, my left forefinger was at once on the wound whenever it was seen, and I was glad to find that, by forcing the shoulder upwards, which was now quite easy after division of the muscles, that I could completely arrest the bleeding by pressing against the first rib.

We had now time to look about us; we had no one in the room to help; so while I still held the vessel, first Dr Leith gave the patient a little more chloroform to ensure her stillness, then we washed all our sponges, got clean water, etc. He then handed me a scalpel, with which I cleared the vessel above the wound and above the clavicle, and easily passed a strong catgut ligature round it by the aneurism-needle. This, when tied, diminished the flow of blood, but did not control it till I again cleared the vessel below the aperture, which was quite easy from the free access we had to it, and passed another ligature, which, when secured, completely controlled the hæmorrhage; we then tied all the other bleeding points—which were not very numerous, from the patient's weak state—washed out the wound with a solution of carbolic acid, stitched up the larger part of the incision, inserted a plug in the lower angle of carbolic gauze soaked in oil, and fastened it all up with a pad of carbolic gauze, twelve layers, and a firm spica bandage.

By this time she had come out of the chloroform, and was wonderfully well. We saw her again in an hour; her pulse had begun to rally. I did not see my patient again, having to leave for Edinburgh, but had a letter from Dr Leith, detailing the future progress of the case, which I have most unfortunately mislaid. The gist of it was, that excessive sero-purulent discharge continued, that for a few days she seemed to rally, and to have less hectic, but that eventually she died exhausted, about a week after the operation.

Remarks.—The unfavourable result in this case was not to be wondered at; indeed, any other would have been almost impossible to expect, for from the condition the patient was in, no sane man would have attempted any such operation, could he have helped it; but, under the circumstances, I was simply compelled to perform this serious operation, or else lose the patient from immediate hæmorrhage. This hæmorrhage might have occurred at any moment during the weeks before the operation, or the days after our visit; it could not have been delayed long; but as it did coincide with our visit, we certainly would have got the credit of it, though our part in inducing it was simply moving the patient in the bed, not even out of the bed, as it had begun before Dr Leith even touched her arm.

Was there any other course to pursue, had we known the exact state of affairs? I think not, except not to have gone to see the patient at all; for no other operation would have done any good. Ligature of the third part of the subclavian in the usual way would not have sufficed, as the large gaping wound, the result of ulceration, would have bled from recurrent circulation, and did do so even after the artery was tied. I do not wish to magnify the difficulties of the operation, but I do not think an operation of such importance has been often done with so little assistance. One to give chloroform, hand instruments, wash sponges, etc., is little enough; and I allude to this merely to express in the strongest terms my sense of the admirable coolness, tact, and skill, displayed by Dr Leith in his very difficult task of being house-surgeon, clerk, and dresser all at once. The case has some important practical lessons to teach. 1. Not to leave abscesses in this region too long unopened. In this case, the fears and timidity of the patient and her friends were the cause. 2. To be exceedingly cautious in moving limbs which have been long stiff, where suppuration has been long going on near a great vessel. 3. Never to begin any procedure, however slight, even probing of a wound, without having your aneurism-needle at hand.

ARTICLE VII.—*Cases from Practice, with Clinical Remarks.* By Staff-Assistant-Surgeon W. CURRAN.

THE following cases, which occurred in my own practice, within a comparatively short time of each other, and at a period of unusual fatality in the 88th Regiment, are selected as being in themselves typical instances of the diseases they are intended to represent, and which they serve to illustrate; and the pathological conditions brought to light through them are such as will, it is hoped, warrant their publication. Having at hand no other than common manuals of old date to refer to for information respecting them, I think it better to abstain from scientific criticism or comment of every kind, and leave them in their unadorned nakedness to speak for themselves. I will, however, throw in, under the head of remarks, such general reflections as their individual characteristics may appear to call for, or as their collateral bearings may obviously suggest; and for the rest, I am willing to trust their interpretation to the courtesy of my readers. I offer them as an instalment of what I would wish to do in the same direction hereafter, should suitable material offer, and as an evidence in support of an impression I have long entertained, to the effect that, in spite of its general monotony, military medical practice is often quite as interesting, and sometimes even more varied, than its counterpart in civil life.

CASE I.—*Aneurism of the Aorta opening into the Trachea.*—No. 1341, Private J. Johnstone, age 34, has completed ten years' service, upwards of eight of which have been passed in India, and his habits are said to be regular and temperate. He is a person of a sanguine temperament and well-favoured complexion, and there is no tendency on his part to syphilitic or other hereditary disease. He has rarely complained of illness since he joined the service; his face is cheerful and indicative of contentment, and his general appearance bespeaks the possession of health.

When admitted to hospital on the 17th of October 1869, with bronchitis, his right lung was so seriously implicated as to be almost entirely impervious to the access of air, and his breathing was everywhere noisy, wheezing, and embarrassed. In spite of this, however, he looked well, he did not hawk up phlegm, or cough with unusual severity, and he stood up without any apparent effort near his bed on my approach. As judged by his manner and appearance, he might have been admitted for the most trivial ailment, and he certainly did not complain of any unusual difficulty or distress in connexion with the chest. He appeared, in fact, to make light of his complaint, and regarded as exaggerated the interest and anxiety his case excited in me; he sat up in bed notwithstanding my orders to the contrary, as soon as my back was turned on him, and he submitted, as I subsequently learned, with no little reluctance to the restraint and regimen I thought it necessary to prescribe for him. Indeed, his whole appearance so imposed on me, and the lung symptoms were so much in excess of all others, that I did not myself fully realize the gravity of his state .

I confined my attention exclusively to the chest, and felt no misgiving as to the result. The surgeon who admitted him noticed a peculiar muffled throbbing in connexion with the heart, which gave rise in his mind to a suspicion of aneurism; and though this circumstance was mentioned to me, yet the chest symptoms so masked the sounds of that organ, or concentrated all notice on themselves, that my thoughts were directed from it at the time, and the treatment subsequently put in force, as well as the unexpected termination of the case, precluded all further investigation during life; I thought, in fact, that there would be time enough to examine the heart after the lung derangement had been provided for, and I directed my treatment and thoughts accordingly. The expectoration, which was at first patchy and nummulated, became, soon after he came under my notice, copious and aeriform; it was expelled with ease, but was never quite free from stains of red arterial blood. The breathing was, as I said before, everywhere noisy, wheezing, and bronchial; the chest did not expand as it ought with deep inspiration; and the presence of snoring and sibilus near apex, and of moist râles (the liquid bubbling rhonchus of Walshe) towards the base, entirely filled the ear, and completely removed every trace of healthy respiration. He was allowed 6 oz. of wine, the right side was freely cupped, and a blister was placed on the sternum. He had also a purge and a mixture, containing prussic acid and tartarized antimony, and turpentine stupes were applied by way of derivative to the back. Under this treatment, aided by rest in the recumbent posture, and the steam of hot water in which camphor had been dissolved, his chest complication improved, and he was so much better on the morning of the 21st, that he got up soon after my visit, and strolled about enjoying his pipe in the outer verandah of the hospital. Returning to the ward, he lay down to rest, and was soon afterwards seized with a hæmorrhage, estimated at several quarts, which proved instantaneously fatal. The conditions under which this took place, are detailed in full below.

Post-mortem examination seven hours after death.—Body well nourished and free from rigidity; there was no appearance of injury or discoloration anywhere; and the nares and moustaches were only slightly streaked with blood.

Head not examined. Chest: On removing the sternum, which was found to be somewhat denuded of periosteum on the under surface, a large, bulging, globular mass was seen occupying arch of aorta, in its transverse portion, somewhat to right of mesial line, pressing on right lung, and by its bulk filling up the interval between base of heart and outlet of chest on its anterior aspect. This consisted of a diffuse aneurism, whose sac was formed by the cellular tissue of the anterior and middle mediastinum and lining membrane of right lung, to which it adhered so closely, that separation could only be effected with difficulty, and which contained upwards of one ounce of dark semi-organized fibrine that was copiously tinged with blood. It was entirely external to the channel of the artery, with which, however, it communicated freely through an opening, with thickened and indurated margins, and it had eaten its way, by ulceration, into the trachea, just above the right bronchus, and between that tube and its fellow of the opposite side. The opening into the trachea appeared to be of recent origin, and about an inch in length. It involved some four rings of cartilage, and through it the bleeding took place which proved so rapidly fatal. The cavity of the arch was enlarged and dilated, and its surface was puckered and covered with patches of atheroma. The heart itself was loaded with fat; it had a soft, sodden feel, from contact with the pericardial fluid by which it was surrounded. Its muscular structure appeared pale on section, and there was some hypertrophy of its substance on the left side.

Lungs: Right, consolidated towards the apex, by the pressure exercised upon it by the mass described above, and congested towards the base, where also there was a slight patch of pneumonic infiltration. It weighed 1 lb. 4 oz. The left was structurally healthy, weighing only 15 oz.; and the other organs did not call for examination.

Remarks.—These need not detain us long, as the particulars given above speak plainly enough for themselves, and leave no doubt as to the nature of the case. I have learned, since this man's death, that, when stationed at Delhi in 1859, he fell down a well, from which, however, he was rescued in a condition and under circumstances which gave rise to no suspicion of his having, at the time, sustained any serious injury. While his comrades were drawing him up, the rope broke, and he fell back again into the pit from which he had been just extricated. While in the act of falling, one of his companions, whether sober or not at the time does not now appear, impelled by that strange and ill-regulated ardour which so frequently seizes soldiers, jumped down after or upon him, and alighted on his shoulders. Of course, the result which this would-be helper wished to obviate, was by his own very act greatly accelerated, and of course also the momentum of this poor fellow's fall was thereby increased tenfold. Whether the rupture that ultimately led to the terrible complication described above took place at that time or not, cannot now be determined, as there is no account of the circumstances available, and there is no one at hand capable of enlightening me further on the point. I think it highly probable, however, that such was the case, and if so, the kindness, not to call it capacity and skill, with which Nature "ever kindly bent to ease us," economizes her resources, and adapts herself to the wants and weaknesses of her subjects, will become more striking than ever. I cannot learn that this man ever complained of shortness of breath, aphonia, giddiness, or any of those other common complications that point to or usually accompany aneurism of the aorta; but the character of the lesion, as described above, may in some measure account for this; and anyhow, his good health and immunity from suffering are, under the circumstances, calculated to create surprise. In this respect, and so far, the case is highly significant. Ulceration of cartilage in the neighbourhood referred to, must be very rare, and I have myself never seen or heard of a case in which an aneurism of the aorta discharged itself through a rent in the trachea.[1]

CASE II.—*Enteritis*.—No. 4769, Private P. Walsh, age 34, service fifteen years, twelve of which have been passed in India; is a man of good conduct and temperate habits, who has generally enjoyed fair health. He suffered a good deal from ague during the summer, and appears to have been much debilitated thereby, but he appeared to regain some of his lost ground since the cold weather set in, and there is no history of syphilis in his case. When brought to hospital about 1 P.M. on the 15th November, he was greatly prostrated from purging and vomiting, and he could scarcely retain any food or physic on his stomach. He was almost pulseless, and could only speak in a low whispering voice, and his breath and body were cold to the feeling and touch. On further inquiry, it appears that soon after rising this morning, and while in the act of performing his ordinary ablutions, he was suddenly seized with an uncontrollable desire to go to stool, and when there, he passed a very copious liquid motion, which came from him, as he forcibly adds, "like a dash of cold water." He subsequently voided others of similar character and consistence, and when seen by me soon after admission, his condition appeared to verge on collapse. The pulse, extremely small, and not always distinguishable, was at best feeble, thready, and flickering, and was soon entirely lost; the voice was husky and indistinct; and the expression indicated great suffering and depression. The surface, though by this time fairly warm, was corrugated and sticky; he complained of an insatiable thirst; said he was troubled with cramps in the legs and pain in the belly; and he passed from time to time a fluid which, under the microscope, was freely stained with blood, and which appeared to contain shreds of mucus, some few oil globules, and more numerous flakes of cylindrical epithelium. It was indeed, to all outward appearance, a case of cholera, but some of the more pathognomonic symptoms of that disease were entirely absent, and, as will hereafter appear, the post-mortem appearances were altogether different. He had been properly allowed some brandy before my arrival, which I ordered to be continued; and as his weakness increased and his stomach became more irritable, I had it replaced or supplemented by champagne. Mustard poultices were applied to the abdomen and epigastrium, and the legs were shampooed to remove or relieve cramps. A hot bath subsequently employed, appeared to soothe him for a while. Cold beef-tea was allowed *ad libitum*, and the thirst was mitigated by the use of lime-juice, champagne, and soda water. Enemata of ipecacuanha and gallic acid, which were given at the instance of Surgeon Fraser, afforded only partial relief, and they entirely failed to check the bloody discharge from the bowels. On the 16th, he was described as no better; and though carefully tended all night, and supplied at frequent intervals with such support as he relished or could retain, he yet was clearly weaker, and every trace of an attempt at reaction had passed away. Bloody serum, of a singularly fetid odour, continued to escape from the bowels, and the attendants complained of the horrible stench of sulphuretted hydrogen the body itself gave out. He still complained of pain in the belly, but was quite free from cramps; the voice was weaker and more suppressed than on the previous day, and he feebly told myself, that he fancied there was nothing at all inside in him. He began to lose ground soon after 10, and died quietly of exhaustion about 11 A.M. of same date.

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[1] I have recently come across cases of the kind here contemplated in the Transactions of the London Hospital, and also in Trousseau's great work on Clinical Medicine, vol. i. p. 596; but I am not aware of any others, and they must, I think, be at least very rare.

Post-mortem examination five hours after death.—Body fairly nourished and almost free from rigidity. Head not examined. Chest: Lungs structurally healthy, but loosely adherent on right side. Heart, dense in structure, heavy to the feel, and but sparingly lined with fat, weighed 12 oz., and was otherwise healthy. Large masses of fibrine escaped from its outlets on division, and the blood was everywhere thin and watery.

Abdomen: Liver soft, friable, and pale on section, weighed 4 lbs. 2 oz., and the gall-bladder was full of dark tarry bile; the stomach and intestines were greatly distended and tympanitic, of a dusky livid colour superficially, and almost entirely denuded of peritoneum; the former was pale in its interior, but the latter were throughout deeply injected, and the smaller bowel contained a large quantity of a dark inodorous fluid, which emitted no smell of fæces. The large intestine more congested than its neighbour, especially so near cæcum, where the injection assumed the dark hue of threatening sphacelus, gave evidence, on its free surface, of extensive shedding and desquamation of the mucous membrane and epithelium, which in some places resembled ulceration, while elsewhere the appearances varied between the vesicular eruption of smallpox, and the rough streaky mottling of scurvy. Similar though less developed conditions were found in the small intestines; the calibre of each was increased, and the power of absorption must have ceased in both some time before death.

Spleen soft in texture, of a deep purple colour on section, and looking like currant-jelly, weighed 1 lb. 5 oz. The kidneys appeared unaffected, and the bladder was collapsed and healthy.

Remarks.—This case, which might be roughly described as a cross between cholera and enteritis, was, as any one capable of weighing the evidence of symptoms, or judging the significance of minute pathological changes, will at once allow, neither one nor the other, though I, in my ignorance, ascribed it to the latter; I knew no better then, and know no better now; and I have not been able to find anything like it in any of the books to which I have had access. I have looked in vain for a parallel to it in the standard works of Martin and Morehead,[1] and there can scarcely be a doubt that it is an instance of a disease *sui generis*, which was due to local influences, and for whose specific designation the new nosology makes no adequate provision. It was a result of that terrible malaria which is so peculiar to and so prevalent in the valley of Peshawur, which so often tends to complicate there the course of cases that would scarcely require serious notice elsewhere, and against whose powerful spell the strongest constitution is not always the best security. Any one acquainted with the modifications of fever produced by this poison in the great valley beyond the Indus, will readily acknowledge its general resemblance to some of the cases he must have seen, and yet there are features attaching to this which are not common even there. Among these, the more striking are, the sudden accession of urgent diarrhœa and sinking, the escape of bloody serum containing masses of oil and mucus, the absence of the pathognomonic discharges of cholera, or of the more pronounced symptoms of enteritis, and yet withal a general resemblance to both, the feeling of emptiness within, and the absence of pain on pressure over the abdomen (while the poor man expressed himself as suffering severely all the while), the intensely fetid odour of the surface, the thirst, pinched face, sunken expression, and suppressed voice, and finally, the cramps, collapse, and post-mortem appearances,—all these formed a *tout ensemble* such as I have never witnessed before, they puzzled my experienced colleague at the time, and determined myself to put them on record in this place; and I have now no doubt at all, that they were due to those peculiar atmospheric or telluric agencies which caused such havoc in the Peshawur district last season. This impression derives additional support from the fact, that some six other cases of the same kind occurred in the regiment about the same time, all of which, however, recovered; and as if to show how searching and impartial they can be, no less than ten children were attacked with convulsions in barracks, within as many days of the date given above. Cholera raged about the same period at Peshawur, and judging by my own observation as well as from the reports of friends, I can, I think, venture to say, that the utterly hopeless and intractable character it assumed there at that time, was due to the same cause.

[1] Looking, in view to the case here described, over the able work of this gentleman, which, I may be permitted to say, I consider to be the best guide to the diagnosis and treatment of disease, as it appears in India, hitherto published, I came across the following passage:—"In sthenic Europeans, this form of fever (intermittent, complicated with jaundice, etc.) is very rarely attended with diarrhœa or dysentery," and said at once, This man could never have served in the great valley beyond the Indus. For though strictly pertinent as regards other parts of India, it is quite incorrect when applied to the type of fever that prevails at Peshawur, where diarrhœa, often profuse, sometimes bloody, and always exhausting, is a common accessory.

CASE III.—*Sanguineous Apoplexy.*—Rose Anne Neill, age 26, mother of three children, of healthy but anæmic complexion, was admitted to hospital at Nowshera, in the afternoon of 6th December, with hot skin, anorexia, thirst, wakefulness, and general malaise; she complained of having spat up some blood in barracks, which was supposed at the time to have come from the throat or fauces, and she was also troubled with nausea, and inclined to vomit, when first seen. When visited by me in the evening, she complained of great uneasiness, not amounting, however, to actual pain, in the forehead and temples; she rolled her head from side to side fretfully, and appeared unwilling to answer questions or be otherwise disturbed. Influenced by her anæmic, pasty appearance, and taking into account that she had suckled her last child for upwards of sixteen months, I ascribed these symptoms to debility, aggravated by the effects of malaria on an enfeebled frame, and ordered her at once some port wine and arrowroot. I left, after having prescribed three leeches to either temple, the application of cold to her head, and the use of half a grain of morphia at bed-time. In the meantime she was to be left alone, and allowed lime-juice and soda-water as a beverage. When summoned to see her again, some three hours afterwards, I found her lying on her back, pulseless and insensible; and the subordinate on duty assured me that he found her in the same condition a short time previously, and that there was not, from the beginning, any appearance of spasm or convulsion about her. I noticed that her breathing was quickened and somewhat embarrassed, that she sighed feebly at times, that the pupils were contracted and almost insensible to the stimulus of light, and the heart's sounds could scarcely be heard at all in consequence of her noisy, jerking, and bronchitic respiration; and having had the misfortune of seeing, some years ago, a case of poisoning by morphia in the person of a woman aged 36, the mother of several children, which bore a striking resemblance to this, I at once suspected a similar complication in the present instance, and was agitated and annoyed accordingly. There was, however, no time for speculation or comparison; the breathing, embarrassed from an early period, had now become raucous and catchy, and nothing but râles could be heard in the chest, and mucus was clearly accumulating in the air-passages. Brandy had been properly given before my arrival; this was ordered to be continued, and was subsequently supplemented by champagne, but she made no attempt at swallowing either, and their exhibition caused a good deal of resistance and distress. Irritants of various kinds, including mustard, liq. lyttæ, liq. ammon. fort., etc., were applied over the abdomen, chest, and calves of the legs, on the neck and behind the ears, and a turpentine and assafœtida injection was exhibited per anum. But no material change was brought about, and even galvanism failed to make any lasting impression. Under these circumstances, and before the case should become entirely desperate, I sent for my senior colleague, Surgeon Fraser, who only slightly modified the treatment above described, or varied it a little by the addition of other stock remedies, and who subsequently gave me the following note of the appearances witnessed by him:—"The pupils had begun to dilate when I saw her, and they appeared to have lost all sensibility to outward stimulation. That part of the surface which was exposed to the air was pale and cold, the tongue and breath were also cold, and the body itself was slightly bedewed with moisture. The wrists and fingers were spasmodically contracted, the thumbs were flexed inwards, and the voluntary muscles could not be induced to uphold or sustain the body in any fixed position." Meanwhile our intelligent apothecary, noticing my great anxiety, and fearing lest his subordinate might be compromised by the result, took him aside, and after impressing on him the gravity of the case, and suggesting the propriety of a candid confession of his error (it seemed to be taken for granted that he exceeded his orders), asked him plainly to state how much morphia he had given her, and thereby obviate the necessity for, or anticipate the consequences of, an investigation. He acknowledged at once that he had not carried out my orders, or given her any medicine at all, and that when he came to administer the dose he found her in the condition already described. This declaration, although it afforded me some relief, did not altogether remove my anxiety, and hoping almost against hope I continued to persevere with such remedies as I thought likely to be of use under the circumstances. These, however, did no good. On the contrary, by increasing the frequency of the respirations and encouraging the struggles of the patient, they tended to exhaust her remaining strength and precipitate the result. Seeing this, I soon discontinued them altogether, and she died quietly and without any appearance of spasm or convulsion, about 2 A.M. of the 7th, some six or eight hours after her first seizure. The appearances disclosed by the examination detailed below, will fully account for the sudden supervention of insensibility, and show that my suspicions were ill founded, and my diagnosis at fault.

Post-mortem examination ten hours after death.—Body was fairly nourished, and the head only was examined. On removing the calvarium the dura mater was found tense and prominent, of a dark-blue colour, inclining to black, and its superficial vessels were enlarged and swollen. This colour was due to the presence of a large quantity of dark venous blood which lay on the surface of the brain and invested that organ like a nightcap. The hemispheres were, in fact, bathed in blood, which smeared the knife and fingers, but could not be traced to any local source, and the *tout ensemble* was such as neither I nor my colleagues had ever seen. The hæmorrhage would appear to be the result of exosmose or exhalation rather than of extravasation or rupture, for there was no accumulation anywhere, and it was pretty uniformly diffused throughout. The pia mater of the sulci clearly showed, through its deep red reticulated layers, the extent of this diffusion, and upwards of four ounces of fluid blood were found at the base. On depressing the skull, bloody serum escaped, in considerable quantity, from the spinal opening, thereby showing that the meninges of the cord were implicated; and the mass itself, divested of all surroundings, weighed 3 lbs. 1 oz. The corpus callosum of the left hemisphere was whiter and softer than its fellow of the opposite side, but the puncta vasculosa were not unduly conspicuous anywhere, and there was very little fluid in either ventricle.

Remarks.—This is a remarkable case, from whatever point we may view it, but space will only admit of my alluding to one or two of its more salient features, and even these must be disposed of very briefly. I alluded above to the resemblance it bore to a case of poisoning by morphia that came under my notice some years ago in the person of a woman aged 36, who was suffering at the time from ulceration of the os, and was, besides, or in consequence thereof, impressionable, capricious, and hysterical. In order to control or reduce one of those violent outbursts of erotic ardour or excitement under which she occasionally laboured, and enable her to get some sleep and regain composure, pills containing two grains of hydrochlorate of morphia were administered to her at some interval, on a certain evening towards the close of the hot season of 1861. She did not sleep well during the night, but there was no rambling or incoherency, and she was drowsy and sickish the following morning. About mid-day, and just as I was about to enter her room in company with her husband, she swooned away after uttering an unearthly cry—" An ominous, and wild, and desparate sound "[1]—and became at once speechless and insensible. Her face was covered with a deadly pallor, bubbles of perspiration started up on her forehead, there were twitchings of the mouth, inversion of the thumbs, and general convulsions, and there was also

"The all white eye
Turned up within its socket."

She looked, in fact, about to die on the spot, and her husband assured me that though she had fits frequently before she never suffered " aught like this," She recovered feebly under the usual stimulants, and was sufficiently well during the day to get out of bed and converse with her friends and family. Drowsiness, however, returned again, and in spite of all our efforts to the contrary, she lapsed into stupor as the night advanced, and died of exhaustion[1] late in the following afternoon, about thirty-six or forty hours after first exhibition of medicine. There was no examination of the remains. Now, taking into account the suddenness of the seizure in both cases, the ages and sex of the sufferers, the fact that though one was older and had borne more children, yet that the other had suckled longer and more recently, and resided besides in a more unhealthy climate; that the skin was cool, and the tongue moist, and the breathing quickened, and the sensibility suppressed, and the pupils contracted in both under somewhat similar circumstances, —I contend that I was justified in reasoning as I did, from one to the other, and in assuming that the same cause was at work in the two. The appearances described above show that I was wrong, and I never acknowledged an error or omission with greater pleasure in my life; for it is a disagreeable thing to be, under any circumstances, and, however unwittingly, the cause of depriving a fellow-mortal of life; and I shall never forget the painful impression this case produced on me at the time, or, I hope, prove insensible to the lesson it is capable of teaching even now. As to the cause of the hæmorrhage, it is not easy to say what that was, or whence this came, and all my efforts at discovering its source entirely failed. It could scarcely be due to the patient's anæmic condition, inasmuch as, "in true anæmia," according to Dr Day (Physiological Chemistry, page 246), "the blood exhibits no peculiarities of composition;" but it is not easy to ascertain whether the blood is within or without the vessels under the conditions here noted, and I believe the theory of transudation or escape of the intercellular fluid or plasma—fraught though it be with many difficulties—will better meet the requirements of the case than any other. With reference to this point, and after describing the circumstances under which hæmorrhage may occur within or upon the brain, Dr Watson says, "There is no reason, I think, for doubting that hæmorrhage, by exhalation, may take place, though rarely from the free surface of the brain, or rather of its investing membrane;" and again (vol. i., 3d ed., pp. 491–7) he says, "I stated before that the blood may sometimes be poured out by exhalation, in those less frequent forms of cerebral hæmorrhage, to which M. Serres has applied the term meningeal apoplexy, and in which the blood is found distending the ventricles, or spread like a cap over the surface of the hemispheres, without any laceration of the cerebral matter. This supposition rests, however, rather upon the analogy drawn from what is known to occur in other parts of the body, than upon any decisive or unequivocal evidence. Blood has not unfrequently been discovered in each of these situations, when the most careful scrutiny has failed to trace its source in any injured vessel. . . . In Dr Abercrombie's book there are two interesting examples of extravasation upon the surface of the brain, without any obvious source of the hæmorrhage." Copland, describing this condition says, in his Dictionary, vol. i. page 81, "It constitutes the coup-de-sang of the French, and is observed in those cases of coup-de-soleil, or sunstroke, which prove rapidly fatal. I have met with it in two cases of this description." I will only add, in reference to this latter point, that, though I cannot lay claim to a tenth of the experience of this laborious writer, yet that I have probably seen as many cases of sunstroke as he has, and in none of them have I ever met with anything like the condition described within.

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[1] A somewhat similar occurrence is described as follows by Moore:—

"And ere the scream
Had half way passed her pallid lips,
A death-like swoon, a chill eclipse
Of soul and sense, its darkness spread
Around her, and she sank as dead."

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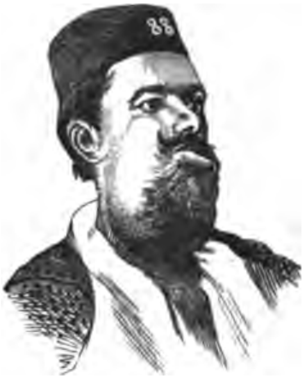
[1] Taylor gives particulars of four cases of death from one grain of hydrochlorate of morphia in adults, and I have lately heard of an instance in which an ordinary dose of James's powder proved fatal to a child; the specimen from which this was taken, and which, it may be added, came from a public store, was found on chemical examination, to contain 25 per cent. of morphia.

CASE IV.—*Encephaloid Cancer.*—No. 198, Private John Sheehy, age 33, a large-sized muscular man of temperate habits, was admitted on the 11th December 1869, at Nowshera, with a tumour of the neck on the right side, which appears to be attached to the jaw, and which, he says, was first noticed as a "kernel" in the parotid space, towards the end of August last; it was then detached and separable, it is no longer so now; and its rapid increase, nodular outline, vascularity, and pultaceous boggy feel, would appear to point to, or imply the presence of, malignancy. On the 23d of the month, he complained of a pain in it which resembled the prodding of a needle, and the skin over the swelling became tense and brawny, and was in parts very sensitive to pressure; it subsequently assumed a dusky reddish hue, and looked here and there as if about to suppurate. Though I had no longer any doubt in my own mind as to its character, I yet thought it only due to him and to myself to give him the benefit of any aid or advice that might be offered by others, and with this view I asked for a consultation with my colleagues. This was held in the morning of the 28th, and it was settled between us, after a careful examination of the tumour and surroundings, that its rapid increase, the extent of surface involved, the vascularity and induration of neighbouring tissues, and, above all, the state of the local glandular and osseous structures, precluded all hope of a satisfactory issue from active interference. It was, indeed, our unanimous belief, that an operation necessitating, as it not improbably might, the deligation of the carotid, and the removal of a large portion of the lower jaw, would only aggravate the present suffering, without offering anything by way of relief in the shape of an equivalent in return, and precipitate a result which was in any case inevitable, and which no efforts of ours could obviate or even materially delay. He was, accordingly, allowed support in abundance; soothing remedies, including belladonna, were applied to the tumour; and a mixture containing arsenic, nitro-muriatic acid, and tincture of bark, was prescribed. Foulness of the mouth and gums was removed or reduced by the use of gargles of carbolic acid or Burnett's fluid, and an air-bed partially relieved the discomfort of his aching bones. He complained, on or about the 5th of January, of double vision, of what he called "glittering" before the eyes. The growth had meanwhile greatly increased, and the teeth on the affected side were loose and movable. The gums on same side were soft and spongy; there was considerable fœtor of the breath, and occasionally some sensorial disturbance on the approach of night, and the expression could no longer be mistaken or misunderstood. A photograph that was taken of him about this time, which I subjoin, in accordance with the suggestion of the Latin poet—

"Segnius irritant animos demissa per aures,
Quamquæ sunt oculis subjecta fidelibus"—

will pretty well show this, as well as give some idea of the size of the tumour, and, better still, save me the trouble of a more minute description thereof.



Without, therefore, unduly protracting the recital of details which admit of no great variety, or dwelling unnecessarily on incidents which must be familiar enough otherwise, I will here content myself with enumerating the more salient features of the case, and leave its minor points to inference and conjecture. Suffice it, then, to say, that the above symptoms increased apace, that the breath became more offensive, the teeth looser, the gums more boggy and œdematous, and that his temper, "never of the sweetest," became morose and irritable, and his disposition anxious and desponding. An attack of erysipelas, which supervened about the 20th January, had the effect of modifying these by diminishing size of tumour, and encouraging in his mind the delusive expectation of its early subsidence or dispersion. And, strange to say, the mass, which previously measured 10½ inches in length, and 6¼ in breadth from below upwards, was now only 6¾ in the former direction, and 4¼ in the latter, and it was, withal, soft, yielding, and spongy to the feel. This decrease, which was variously accounted for by my colleagues and myself as due to interstitial absorption, arterial obstruction, or metastasis, was, however, of short duration, and when the erysipelas disappeared, the growth of the tumour became, as was anticipated, more rapid than ever. His worst symptoms soon returned; he lost flesh daily from inability to masticate solid food or obtain sleep, and the fœtor of the breath was such that the other patients objected to sleep in the same tent with him. The tumour felt hard, brawny, and unyielding; it bled on the slightest provocation, and it was at all times the seat of a dull, heavy, continuous pain, which was, however, free from pulsation or throbbing. The teeth were all loose on right side as far as left bicuspid; the right cheek was so much swollen and infiltrated as to encroach upon and close up the right eye; and he suffered so much from the shaking of the dooley, on the march from Nowshera to Rawul Pindee, as to necessitate his being left behind at the last-named place. He was accordingly transferred to care of Surgeon of 1/6th Regiment, on the 6th February, and he died rather suddenly of exhaustion on the 25th of same month.

The following meagre summary of post-mortem appearances was furnished by the officer under whose care he died, and I am sorry I cannot commend it for the fulness of its information, or the accuracy of its details. It neither gratifies curiosity by minuteness, nor fulfils expectation by research, and it is, I think, much to be regretted that no notice was taken of the internal organs.

Post-mortem appearances five hours after death.—"The tumour was a soft cancer (encephaloid), apparently taking origin near the angle of the jaw, in the parotid glands of the right side; part of the bone of the lower jaw was bare near the angle, the periosteum being thickened and ossified near the part; body was not examined farther." The gentleman who made it had the kindness to inform me subsequently, that "the jaw was very little implicated, being merely stripped of its periosteum to the extent of a florin or so," and he thought "it"—the tumour—"may have sprung from the periosteum of the bone or the neighbouring glands."

Remarks.—Cancer is, comparatively speaking, so rare in the army, as almost to justify the publication of any cases that occur, irrespective of their own individual merits, and even though they present no more striking points of interest than those recorded above. I have myself seen only two cases in a service of more than fourteen years, and these occurred at very distant intervals of time and place, at Pembroke and Peshawur, and affected in one instance the lung, in the other the liver. I believe the experience of other officers is not much different from my own. With regard to the question of operative interference in this and similar cases, there can be no doubt that surgery is much less likely to prove of use in the removal of cancerous growths than in the treatment of almost any of the other diseases with which the military medical officer has to deal; and whatever may be the result at home, climate, and the contingencies of service, will always counsel abstinence in India. Had I seen this man at an earlier period of his illness, I might, perhaps, have been induced to interfere, and there might even have been some room for hope at a later period, had not I—and in this assumption I was confirmed by my colleagues—supposed that the osseous tissue was more seriously involved. It is, indeed, hard to reconcile the account given above with the appearances noticed during life; and the mobility of the teeth, the enlargement of the sublingual glands, the fœtor of the breath, and the sprouting spongy condition of the gums, seemed to point to a much greater implication of the bone than is there described. The result would, I suppose, be the same in either case; with this difference, however, that there would be an aggravation of suffering in the first place, and an exacerbation or increase of development in the second. It was obviously desirable to avoid these on the eve of a long march, and at a time when the disease was rapidly extending; and I have no sympathy with those who resort to the knife at all hazards, and under circumstances which clearly contraindicate its use. By way of illustration, and as an evidence in favour of the views here advocated, I will quote the following from the *Lancet* of January 1869, and with it bring this paper to a close:—"Professor Von Nussbaum, of Munich, has published a case of cancer of the rectum, in which he performed a bold operation. The neck of the bladder and the prostate gland had been invaded by the disease, and the enterprising professor, encouraged by four cases of a similar kind which he had treated, removed a portion of the rectum, the prostate, and the neck of the bladder. The details prove, the writer adds, that M. Nussbaum is ready for any emergency, but ***relapses occurred in all the cases within a few months***, and it becomes a question whether surgeons are justified in undertakiug these operations." It does, indeed; and my own decided opinion is, that they are not. On reading such details, one feels half inclined to regret that this enterprising operator did not carry his enterprise a little farther, and cut short, at one bold stroke, the sufferings of his unfortunate patient; but Bavaria, doubtless, has a criminal code like other civilized countries, and it is to be hoped, in the cause of humanity, that all German experimentalists "in corpore vili" are not insensible to the calls of conscience.

ARTICLE VIII.—*Colonial Lunacy Boards; with special reference to New Zealand.* By W. LAUDER LINDSAY, M.D., F.R.S.E., Physician to the Murray Royal Institution (for the Insane), Perth.

(*Continued from page* 829.)

III. *Duties of a Colonial Lunacy Commissioner.*

IN all probability the duties of an inspector of asylums in such a colony as New Zealand will be much more numerous, arduous, and varied than those of a British Lunacy Commissioner, and also somewhat different in kind. For instance, he is likely to be called upon to act as his own secretary and clerk; he will have no colleague, no proper office-provision. In other words, he will be expected *in himself to constitute a board of lunacy!* His duties of inspection will involve a large amount of travel,[1] mostly by sea—in stormy weather frequently, and on dangerous coasts. He will be called upon for numerous *reports*, which will be the subject of keen criticism by the abounding newspaper press of the country—a press which has "no respect of persons"—and by *parvenu* settlers, determined to get their money's worth out of a paid government official. If he is to discharge his duties properly, it will also fall to him to collect, tabulate, and generalize from the *statistics* of the different provincial asylums now existing, or that must shortly be erected. He will be appealed to by the authorities of these asylums for *advice* on all manner of details, involving him in a large *correspondence.* He will be summoned to all sorts of official *interviews*—with legislators on the one hand, and with the local asylum authorities on the other. In all cases of disputed insanity, especially in all cases of the plea of insanity in criminal or other legal procedure, he will probably be cited as an *expert*, and expected, as a salaried public officer, brought from home for the avowed object of making himself "generally useful" in all public or private difficulties relating to insanity, to give his evidence or certificate—*gratis.* He will, in fact, be a general *referee* in all matters connected with insanity—to whom every settler, as well as every public authority, will not hesitate to apply, expecting or exacting his immediate and full assistance, whether or not it be part of his stipulated duty. His work will thus so far be made for him, if he so permit. But, on the other hand, he may very much make his own work. The *letter* of his engagement may stipulate only for certain duties of *inspection and report:* and the simple discharge of these stipulated duties may be comparatively easy. In proportion, however, as they are easy, they are likely to be of little real service. The mere inspection of the provincial asylums is likely to occupy little time compared with the secretarial labours of a public servant, who desires to make his office of real use by the collection of material towards the elaboration of facts and statistics, available for the improvement of the lunacy laws, and of the whole lunacy system, of a young, rapidly rising colony in its plastic stage. It is quite impossible, however, that *a single inspector* of asylums can properly discharge the important and multiform duties of a lunacy board in such a colony as New Zealand.[1] Not only should he have clerical assistance, but a *central board* should be constituted, composed, it may be, as at home, partly of *unpaid* members,[2] including at least one barrister of eminence, with several members of the legislature or other public men, under the chairmanship of the governor of the colony, the superintendent of a province, or some other central authority.

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[1] The North Island is 500 miles long and 200 in greatest breadth; the South, 550 long and 210 in greatest breath. The group extends through thirteen degrees of latitude and longitude (34° 15′ to 47° 30′ S. lat. and 166° to 179° E. long.), with a coast-line of 4000 miles.

The tendency of colonial governments is to *overload* their officials with duty, and to *underpay* them in relation to the character and amount of the work exacted; in other words, while giving a public officer a very moderate salary for *one* man, they heap upon him the proper labour of *two* or *three*. The result is simply and surely this, that the work is not thoroughly done; that jacks-of-all-trades are substituted for masters of one, and that division of labour and increase of emolument become necessary, in order to the due execution of the work desired. Thus, in Otago, the secretary of the Education Board is also inspector of schools for the province. But the work either of inspection in country districts, or of managing in Dunedin the affairs of an important board, is sufficient to occupy the whole time and energies of any *one* man. Hence one department of the work has suffered, that of inspection, at the expense of the other. The officer in question, one of the hardest-working public men in the colony, and the very last man to shirk any duty that he could possibly accomplish, has repeatedly reported to the provincial government that the work of inspection was greatly in arrear, and that a subdivision of his official duties was requisite, in order to the due accomplishment of either department; in other words, that an inspector of schools was urgently required, distinct from, and in addition to, a secretary of the Education Board.[3] Again, the recently appointed Professor of Natural Science in the University of Otago—an institution which, notwithstanding its pretentious name, is simply on a par with the mechanics' institutes of Britain—is required to teach not only all the departments of natural history

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[1] Where, on the American continent, such officers have been tried, the good they have effected has been problematical—the evil apparent. Their office, in some cases, has been only nominally useful, in others obviously mischievous.

[2] Equally in Otago, Nelson, and Auckland, I met philanthropic or public-spirited men, who would be too glad, I am sure, to have such an opportunity of serving their fellow-colonists. I allude to such men as the Hon. Mr Ball, of Mongonui; the Hon. Mr Macfarlane, of Auckland; Judge Manning, of Hokianga; the Hon. John and Edward Cargill, both of Dunedin; Capt. Rough, of Nelson; and Mr Shaw, of Finegand, Otago.

[3] *Vide* "Departmental Reports" of the Provincial Government of Otago: Education; 1870, p. 2, and 1869, p. 3.

(that is, geology, mineralogy, zoology, botany, meteorology, and hydrology), but chemistry, mining, and agriculture; and he is, in addition, to be the curator of a provincial museum.[1] The consequence must be, either that he will teach one subject properly, and neglect all the rest, or teach all of them imperfectly (or improperly), and so defeat the object of his appointment; for the teaching of each one of the departments of science he is called upon to "profess" is work enough for any one man of average ability and attainment.

The duties of *British* Lunacy Commissioners are not models for those of Colonial Asylum Inspectors. For, in this country, their time is mainly, or at least too much, occupied with work that is in itself *unnecessary*—the supervision of existing asylums: while little or no attention is given to the much more important supervision of the insane who are *not in asylums*, and to the determination of those who are suitable, on the one hand, for residence in private dwellings, and of those who, on the other, require hospital treatment. Nor is anything done officially towards the *prevention of insanity* in future generations,—a subject which is of infinitely greater consequence than the custody or cure of those who are already insane. When a public asylum has been, in this country, constructed under the auspices of a board of lunacy, a competent superintendent and staff appointed, and a local board of directors constituted, it may be not only safely, but best, left to manage its own affairs; and the time occupied by the visitation of, and reporting upon, such local establishments—which in England amount to 71 public and 106 private asylums[2]—might be much more advantageously, for the public benefit, directed to the condition of those insane persons who are scattered throughout the country in the houses of their relatives or friends, in other private dwellings, in poorhouses and jails, or in other receptacles of the dependent or criminal classes.[3] The result of the imperfect supervision of the insane not in hospitals in Britain is this, that every now and then cases of gross neglect of, or of cruelty to, lunatics are detected in private dwellings, and become the subject of sensational and damaging articles in the newspapers

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[1] *Vide* what I have said on this subject in the "Scottish Naturalist" for July 1871, p. 66.

[2] According to the last (25th) Report of the English Commissioners in Lunacy (1871):—

I. Public—(*a*) County and Borough Asylums		51	
(*b*) Hospitals		20	
		71	
II. Private—(*a*) Metropolitan	41		
(*b*) Provincial	65		
		106	
		177	

[3] In 1870, in England, according to the 24th Report of the English Lunacy Commissioners (p. 263), no less than 11,358 insane paupers were in workhouses, and 7086 "residing with relatives or others."

throughout a country which boasts, vain-gloriously, of taking the lead in the humane treatment of its insane,[1] and therein or thereby of showing an example for the rest of the civilized world to imitate! Such incidents occur in England, which has certainly the most fully-equipped Lunacy Board of any country in the world. It is not, however, by Lunacy Commissioners that such instances of ill-usage are generally detected, though they never fail to be "in at the death," and contrive to get as many fingers into the pie as is possible under the circumstances. Similar occurrences take place in other countries whose lunacy system is usually regarded as perfect, and probably for similar reasons, that the time of Lunacy Commissioners is occupied by different and less necessary duties. Thus, it would appear that the inspectors of asylums of Belgium must perform their duties in a very perfunctory way to omit detection of such cases as that described under the heading "Cruel Treatment of Belgian Lunatics," in the British newspapers of January 1872, commenting on recent disclosures concerning the state of the asylum of Evere, near Brussels. "The press," we are told, "of Belgium directs attention to the conduct of the inspectors of asylums, and public opinion generally calls for a revision of the law which regulates lunatic asylums" in that country. It is a curious but instructive illustration of our national complacency or egotism, that our public press directs attention to a state of affairs in Belgium which exists among ourselves;[2] and for which our Belgian confrères are not more blameworthy than we are!

Not only, however, does the present kind or degree of supervision of the public asylums of Britain by its Lunacy Commissioners appear *un*necessary, it is in certain respects also mischievous. It tends, for instance, to the destruction of all independence and originality of effort on the part of asylum physicians, to the reduction of all local asylums and their affairs to a uniform official level of docile and respectable mediocrity. By the imposition of multitudinous regulations,[3] forms, and books; by incessant and vexatious interference[4] of various kinds, it distracts the attention of the medical heads of provincial asylums from their proper duties, occupying them with correspondence, book-keeping, and statistic-compilation.[1] In short, whatever may be the amount of *good* effected by our Lunacy Boards—and there can be no doubt it ought to be much greater than it is—the *mischief* they do, so far as concerns our public asylums, is much more obvious, and perhaps counterbalances the good resulting from their supervision.[2] This should not be the case in *any* country, and, above all, such a state of matters ought to be avoided in a *new* country. So far from *dis*couraging, Lunacy Commissioners in all countries should *en*courage, or at least leave alone, independence and originality of opinion and practice, so long as they do not lead to manifest absurdity or abuse. All progress in the treatment of the insane has arisen in this way, by the unrestricted development of personal originality and personal enterprise, and only in this way can further progress be expected.

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[1] How ill-grounded are *England's* claims to pre-eminence may be gathered from the last Report of the Massachusetts State Lunatic Hospital at Northampton (16th, 1872, pp. 29 and 31), written by Dr Pliny Earle, one of the best-known alienists of the United States, who only last summer (1871) made a third visit to the chief lunatic asylums of Europe, of which he has inspected, during the last thirty years, no less than 83.

[2] Cases of ill-treatment or neglect are given in some of the Reports of the English Lunacy Commissioners themselves; *e.g.*, in the 23d, for 1869, pp. 98 and 102.

[3] Arthur Helps, in his "Hints for Essays" (in "Good Words" for February 1872, p. 143), says:—"*Rules* are the inventions and the safeguards of *mediocrity*."

[4] I might cite at least one case in which persistent long-continued annoyance from a Lunacy Board led to the shattering of the health of an asylum physician, and finally to his resignation.

There could not, then, be a greater mistake than to *overgovern* the local asylums of a young country. I could name some of the largest and best-known British asylums, the curse of which is or has been overgovernment by their boards of managers; the existence of which boards and managers proving a upas-tree, under whose withering shade prosperity or efficiency, *quoad* the welfare of the patients, is simply impossible. Unfortunately, these asylums are usually in or near our chief cities, and, on account of their greater accessibility, are those generally visited by foreigners desirous of judging of our system of dealing with the insane, or of constructing hospitals for their treatment. I know of no exception to the rule that, in proportion as the affairs of a public or private lunatic asylum are confided to *one supreme authority*, they are efficiently managed, harmony prevails among its officers, and reputation is attained. On the other hand, just in proportion as there are "many masters," a number of directors intermeddling with matters which it is impossible they can understand, or a number of officers having independent position and conflicting authority, encouraged to check or spy upon each other, the opposite unfortunate conditions do not fail to result. I can recall no instance in which a board of directors has given celebrity to an asylum—save by their fortunate selection of a medical head to whom they have confided the management of its affairs. Nor do I know of any case in which any other reputation than an evil one has resulted from the futile attempts at harmonious management by a multitudinous staff of officers of equal, or nearly equal, position and authority. On the other hand, it is easy and satisfactory to point to several asylums, private and public, the well-deserved reputation of which is due entirely to the efforts of the medical head,[1] and to the good sense of his board of directors, where such a board has existed, in leaving the management virtually in his hands.

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[1] This is most obvious where the asylum physician has no medical assistant or clerk on whom to devolve duties that ought to occupy the attention of a special officer at a special salary.

[2] On the subject of independence of action without boards as in America, contrasted with the tyranny by boards as in England, the reader may compare an English criticism in the "Journal of Mental Science" (vol. xii., for 1866, p. 211) with an American one in the same Journal (vol. x., for 1864, p. 585).

The supervision of the patients in private dwellings ought to be made a matter of primary importance in the public provision for the insane of a young colony. For, the extent to which the family system is practicable must determine the number and character of the central hospitals required for those who are unsuitable for private custody or treatment; and it is these public asylums that are the chief cause of expense to the public exchequer. It should be laid down as a fundamental series of propositions, in making public or state provision for the insane in a new country, that—

(1.) No more central hospitals (so-called lunatic asylums) should be constructed than are absolutely necessary.

(2.) Such hospitals should, from the first, so far as possible, be restricted to their legitimate functions, the treatment and custody of those insane who are unsuitable for extra-mural management.

(3.) Only a proportion of the insane of any country require hospital treatment: the remainder being capable of much more economical and equally efficient management in private dwellings, on the basis of ordinary domestic life.[2]

It is generally supposed, or assumed, even by those who are favourable to the home-treatment of the insane, that what is now widely known as the *boarding-out system* is possible only in *old* countries, such as Belgium [3] or Scotland, in either of which it may be seen at the present day in successful operation. I believe such an opinion to be a mistake. After studying the system both in Belgium and Scotland; and after visiting New Zealand, Australia, the United States and Canada, I am convinced that there is less real difficulty in inaugurating and successfully carrying out such a system in young or *new* countries (whose settlers are keenly alive to their own interests, and who are liberal and tolerant in their views, eminently adaptive and progressive in their social economy or polity) than in *old* countries such as England (whose inhabitants are saturated with prejudice, and environed with absurd customs frequently springing originally out of very different conditions of society, sometimes dating from the remote ages of superstition).

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[1] For instance, the Crichton Royal Institution, Dumfries, whose reputation was created for it by Dr Browne, afterwards one of H.M. Commissioners in Lunacy for Scotland.

[2] The distinguishing features of the boarding-out or family system of treatment are discussed in the following papers:—

(1.) "The Family System as applied to the Treatment of the Chronic Insane."—Journal of Mental Science, vol. xvi., 1871, p. 497.

(2.) "Gheel in the North."—Brit. and Foreign Medico-Chirurg. Review, January 1871, p. 33; and "Northern Ensign" (newspaper), 29th September and 17th November 1870.

[3] I visited Gheel in August 1871; inspected the Central Asylum, under the auspices of Dr Bulckens himself; and was accompanied to specimens of all classes of the houses, cottages, or huts containing insane boarders, by one of the most intelligent of the inspectors of the out-boarders.

What is really mainly required for the development of the economical system of the family treatment of the insane in all countries is, enlightened public opinion on the one hand, and a suitable class of custodiers on the other. That such *custodiers* are to be found in all the countries or colonies I have mentioned, I have myself no doubt. In New Zealand they are to be looked for preferentially in the peasant-proprietor class, among married couples, who at home belonged to the rank of ploughmen or artisans—who have spent a few years in the colony in service, saving in that time a sufficiency from their high wages to enable them to purchase little slices of 50 or 100 acres of freehold land on which they have erected modest homesteads.[1] They have emigrated with a laudable desire to better their worldly position; and by industry and good behaviour they have succeeded in doing so. But they are not well enough off to render them independent of any means by which they can legitimately eke out the income arising from their invested £50 or £100. Such persons are usually frugal, prudent, sometimes wonderfully well educated, intelligent, shrewd, kindly, charitable, and hospitable. Struggling to establish their position as landed proprietors on the small scale, many of them would, I feel assured, be glad to assist themselves by taking insane boarders[2] of the same class as those to be found at Gheel in Belgium, or at Kennoway and other villages in Scotland. Nor could a more desirable position be obtained for the patients. Free life in a very literal sense—all the joys of domesticity in a family circle, which usually includes a number of children—the advantages of healthy and frequently beautiful position—all the creature comforts and all the stirring interests of farm-life—healthy, homely, abundant fare—a motive to work and a sphere for work in the cultivation of the virgin land, or about hearth and home, according to sex,—the homestead of a New Zealand peasant-farmer, such as I have myself met with and lived upon in Otago, with the life to be found in and around it, appears to me to offer the very *beau idéal* of the family system of disposing of the harmless and industrious insane.

The definition of the duties of a Commissioner in Lunacy requires some definition of those of the local asylum physicians. There must be many duties that a single inspector of asylums cannot perform, which may be fitly discharged by the provincial asylum physician. Thus, he may, and ought to, superintend the colonization of out-patients in his own district; because frequent interchange must occur between out and in patients; and the two modes of treatment—boarding-out and hospital life—are but departments of one judicious system of management, which ought to be worked by the same authorities. If there is only one general inspector of asylums, the provincial asylum physicians should also be local or district inspectors of lunacy; though, in order to the discharge of such extramural duties, they would require to have either assistants or deputies. It is impossible, however, that they could, with due justice to their primary functions, inspect *all* cases of insanity occurring in a large, or even in a small, province. They would require the assistance of the police, and of the legal or medical authorities, scattered throughout the country. Nor is there any good reason why the provincial asylum physician should not be allowed—as is so frequently the case in Britain—to act as a *consultant* in insanity cases, and in this or other ways to eke out a salary which is not likely to be independently large or adequate.

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[1] Thus, I met in Otago with married couples of the ploughman class getting £100 a year of wages, with everything found, on an up-country station—the man acting as farm-overseer, the woman as housekeeper. They were enabled to save almost the whole of their earnings, and in a couple of years were bidding for 100-acre lots on which to set up for themselves, with a certainty of making an independence in the event of life and health. There were also many cases of single men—young clerks, artisans, or ploughmen—possessing their fifty acres of bush, hill, or flax land, which they had bought at £1 per acre.

[2] I found many of them thankful to get sane boarders, whom they made most comfortable.

IV. *Status and Powers of a Colonial Lunacy Commissioner.*

In order to the highest measure of usefulness of a colonial inspector of asylums, he ought to stand in proper relation to the Government, the public, and the authorities of the provincial asylums respectively. Their interest and his ought to be the same—the welfare of the insane of the colony, and the devising and carrying out the best means for securing their recovery or custody. There ought to be a harmonious co-operation between all classes of authorities concerned in the supervision of the colonial insane, and of hospitals for their treatment. In proportion as such harmony exists, there will be efficient and economical action. If, instead of pulling together in the same direction, the different authorities act upon their respective rights or powers by opposing each other, or neutralizing each other's efforts, nothing but confusion can result, and the position of the inspector will become a false one, both as respects himself and others. In order to harmonious co-operation with an inspector, it is necessary he should command the confidence and respect of all classes of the other authorities, who are concerned with him in making proper provision for the management of the colonial insane. He must, therefore, possess the qualities that in such a public officer are calculated to inspire confidence and esteem, which I have already specified under the head of his qualifications for office. Inasmuch as the best judges in a colony of the qualifications of such an official are the physicians of the various provincial asylums,—men of experience in the specialty of insanity,—it is more especially important that his experience and ability should be such as to command their respect.

Unfortunately, *in Britain* there is a natural antagonism between lunacy commissioners and asylum physicians, arising from the very different point of view from which they respectively regard the same things.[1] This, again, is due to the circumstance, that very rarely indeed, in this country, is a lunacy commissioner appointed on the sole ground on which he ought to be appointed—that of merit—of *conspicuous ability and experience:* very rarely is he selected from among the most eminent practitioners in lunacy, or asylum physicians, in whose ranks alone are to be found the most able experts in lunacy matters. Too frequently the gentlemen appointed by Government have had no experience in the treatment of insanity, or in the management of asylums; and, indeed, it would appear as if ignorance of their special duties were considered a qualification. This practice of our Government, which is not confined to lunacy boards, but extends into every department of the public service,—the appointment of the *influential incompetent,*—has tended more than anything else to place Britain at a sorry disadvantage with, or in most unfavourable contrast to, other nations—for instance, Germany—in respect of, *e.g.*, her army[2] and navy, universities, schools, and education, technical and general. As regards lunacy commissioners, it is impossible that asylum physicians, many of whom are men of far higher ability, and of infinitely greater experience, than the majority of the Lunacy Board officials placed over them by a paternal Government, can regard with any respect, other than that which the laws of the country and the precepts of Christianity exact from inferiors to superiors *in office*, men who possess none of the inherent qualities or qualifications that deserve respect—can esteem gentlemen who owe their good-fortune to their relationship to, or acquaintance with, this or that Lord Chancellor or Lord Advocate, member of Parliament, or member of H. M. cabinet who may be at the moment in office, and not to any inherent merit of their own. It is not surprising that the general feeling of asylum authorities in this country, including the directors—who represent the best classes of the public—as well as their physicians, should be this—that Lunacy Commissioners are paid for fault-finding, and that they succeed in discharging this very easy though invidious duty. Nor is it wonderful that inexperienced men should be doctrinaires, and should believe in and be actuated by *criteria of excellence*[3] of the institutions they are called upon to inspect, that are generally fallacious and frequently ridiculous; that they should every now and then contradict themselves, approving at one time what they censure at another; that the boards of directors of asylums should prefer their own ample experience of establishments, with all of whose details they are minutely acquainted, to the suggestions of hypercritical commissioners who visit once or twice a year for a few hours; that local boards and their officers should avoid, so far as they can, the dictation and interference of the central Board of Lunacy, while the latter stretches its power to the utmost limit, so as to bring all local boards and institutions—and especially those which are independent or recalcitrant—under their official sway. In short, our colonies could not have *worse* models—in certain respects—in the construction of their lunacy boards than those of the home country!

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[1] I have, for instance, given myself the trouble of visiting asylums recommended by the lunacy boards of each of the three kingdoms as possessing features worthy of imitation, with this result: that in *all* cases I have been grievously disappointed. Their *criteria of excellence* were obviously most fallacious!

[2] It is perhaps in war, where decisive action is pre-eminently called for, that the effects of this incompetence of leaders becomes most apparent. The Indian mutiny and the Crimean campaign furnish a sufficiency of disgraceful but instructive illustrations.

[3] These *criteria* include, for instance, the absence of mechanical restraint and of seclusion; the number in bed or engaged in occupation or out-door exercise;

The want of adequate *power* to compel this or that reform is a common complaint among the lunacy boards of Britain or other countries.[1] In our own country, the public is chary of confiding too much power to central boards, that have over and over again shown their disposition to abuse the powers they already possess, and to possess themselves of others to which they have no statutory claim. If a defect is pointed out by the public press in our lunacy system, and the inference is drawn that surely this is a matter which would never have happened had the well-paid lunacy boards of the country been properly vigilant, the said boards are sure to be ready to explain, with many regrets, that that particular defect is just one which their *limited powers* are inadequate to rectify. The truth is, that our Lunacy Commissioners possess many unnecessary powers, and discharge certain unnecessary duties, while they do not possess powers, and do not perform functions, which are both more desirable and more necessary. The power of a Colonial Lunacy Commissioner is likely to be confined to the inspection of asylums, and reports thereupon to Government. The latter will probably reserve to itself the power to carry out or not the suggestions made by their inspector, or to remedy or not the evils which he may point out. But, if the present Government of New Zealand is not much more zealous and active in lunacy reform than its predecessors, or than the sister Government of New South Wales, the recommendations of an inspector of asylums may come to nought, at least in his day and generation; and his services may prove, in this way, infertile. If it is inexpedient to confide certain powers to an individual, they should at least be safely confided to a board constructed of the elements already suggested; and this is just one of the many arguments that can be adduced in support of the recommendation

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the mortality and recovery rates; quietude; cleanliness of galleries; use of *parole* or of drugs, alcoholic stimulants, and malt liquors; farm or garden returns, and so forth.

[1] *E.g.*, The Board of State Charities of Massachusetts, in reference to the insane of that state.

that *every British colony should possess a central Board of Lunacy*, which need not be by any mean an expensive one, if there are men in the colonies, as at home, able and willing to give their time and attention gratuitously to the public good in the public service. The power of a Colonial Commissioner of Lunacy should, however, be sufficiently ample at least to secure for him the respect of the local asylum authorities; though, at the same time, he should be careful in the exercise of his powers. Local asylum physicians should have—and must have, for the due performance of their important functions—a large measure of *discretionary power*, and should not be unnecessarily interfered with by the central authority. Non-interference with the superintendents of provincial asylums—unless in cases of obvious necessity—should be a part of the official policy of the commissioner. *Over-government* should be sedulously avoided. Instead of acting the part of a captious critic, ready to find fault with, and to expose to the public, all the errors of omission or commission—all the petty accidents, misunderstandings, and *contretemps*, that must occur in the management of every community of the insane—it should be the policy and privilege of the inspector, by all his personal or official influence, to support the medical directors of the various provincial asylums against the effects of the ignorance and prejudice of the public on the one hand, and the Legislature on the other. If the Government inspector is—as he should be—a gentleman who has himself occupied for a series of years a position of the highest responsibility in the management of a lunatic asylum, he will be—or ought to be—ready thoroughly to sympathize with all the difficulties of his colonial colleagues; and it should be his duty and delight to endeavour to lighten their sorrows and labours, and to encourage them in the independent and self-reliant discharge of their most delicate duties. On the other hand, the provincial asylum superintendents should be able to look up to the Government inspector both as a friend and as an authority; they should not fear to consult him in all their difficulties; nor should they hesitate to appeal to him against the public or official misunderstandings or injustice that are sure to occur now and then to each of them. It is obviously highly desirable that this sort of paternal relationship should subsist between the central Government authority and the supervisors of local hospitals for the insane, over whom and which he is called upon in a sense to preside. *Harmonious co-operation* is as important to the welfare of the local institutions as to the usefulness of the general Government Lunacy Department. But, as before explained, such a relationship can subsist only if the inspector placed over them by Government is a man whose status, ability, and experience are calculated to command the esteem of the local physicians. Such a man is not—or at least at the period of my visit was not—to be found in the colony itself, and is scarcely to be found in Britain. If he is to be met with in the ranks of our asylum physicians, he is not likely to sacrifice his comforts and prospects at home unless for liberal emoluments, proper superannuation provision, and a clear definition of practicable duties and status, on the part of the New Zealand Government.

V. *Mode of selection and appointment of a Colonial Lunacy Commissioner.*

The existing mode of filling up certain classes of lunacy appointments at home and abroad, is by—

(1.) Public *advertisement* in the general newspapers, as well as in the medical journals.

(2.) Public *competition;* and—

(3.) The application of the *testimonial* system.

No doubt, public advertisement is the best means of drawing forth candidates, but not *the best* candidates. I have known this system fail over and over again, as regards the appointment of all classes of asylum officers. Repeatedly—in the institution over which I have myself presided for nearly eighteen years—I have had occasion to set aside all the numerous candidates who have applied in answer to public advertisement for subordinate offices, notwithstanding the said applicants included many persons of experience in other asylums. The same has happened in other institutions of a similar kind; the authorities of which have been glad to *offer* their appointments to suitable non-competing persons, and have had reason to congratulate themselves if, by more liberal salaries, or by other inducements, they were successful in securing their acceptance. In truth, if the *best qualified* persons are desired, they must be sought for, and the appointments *offered.* Men of reputation will not submit to the indignity of comparing themselves, or of having themselves compared, with hosts of incompetent men, their inferiors, not only in age, but in every respect, who come forward in reply to the invitation of a public advertisement, and who can lose neither prestige, nor anything save the cost of their "testimonials," in the event of non-success. In exercising my own patronage, I have repeatedly had occasion to set aside the influentially-urged claims of candidates, and to *offer* vacant appointments to competent but non-competing persons. And the only two asylum appointments I have myself ever held were *offered* to me. Under other circumstances, I certainly would not have been appointed, for the simple reason, that I would not have competed nor become a candidate, and this because, at the time the said offers were made, I had no desire for appointments of such a kind. The *principle* of selection and appointment in the case of a colonial lunacy commissioner ought to be that which actuates the German Government in making appointments to its universities;[1] the result thereof is the obtaining of a class of men far superior, as a rule, and as a whole, to the occupants of British, and especially of Scotch, university chairs.[1] That principle is the *search for the fittest* man to occupy, with dignity and advantage, a given post; and the *offer* of the said post as a compliment to his recognised reputation or ability. The *testimonial* system has become an utter nuisance in this country. As a means of bringing forward the best men for a given post, it is utterly fallacious and non-reliable. Testimonials are granted from most opposite motives—frequently from motives of an indefensible or even disgraceful kind. Sometimes they proceed from good-natured persons, ignorant personally of the candidate on the one hand, and of the nature of the office for which he applies, on the other; or they are given by personal friends, who naturally take one-sided biassed views of a candidate's abilities. In the exercise of my own patronage, I have been led to suspect the character of the candidates who produce flaming testimonials, which are undoubtedly often "too good to be true," or the character of the granters of such so-called "certificates," and I never rely on *them* when I can possibly help it. I have been in the habit of appealing confidentially to some one of the certificate-givers, in whose honesty and opinion I believed I could place reliance, and I have sometimes found that the same person who grants a most favourable or flattering public (or printed) testimonial, actuated by the kindly though not altogether commendable desire, "not to stand in the way of a young man's advancement," has privately expressed his conviction that a given candidate was quite *un*suitable for my purposes, or for a given office. Such is the belief of many of the best men of the day, in this country, in the absurdity of testimonials of the orthodox kind, that they rather abstain from application for offices for which they are eminently fitted than condescend to give the approval of their personal example to so vicious and absurd a custom. Men of recognised reputation do not require, or should not require, any such questionable assistance. Their publications, or their work, on or by which their reputation has been gradually built up, have long been before the world; and if they are worth anything at all, the press, and, through it, competent *public opinion*, has pronounced an unbiassed judgment.

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[1] In Germany, says *Nature*, of April 13, 1871 (discoursing on "Natural History Museums"), "Appointments to the professorial chairs are *not* thrown open to *competition*, and the system of *testimonials*—humiliating alike to the candidate and his supporters—is *unknown* in German universities. Men of

Having now stated what *ought to be* the emoluments, duties, status, and mode of appointment of colonial lunacy officials, let me introduce, by way of contrast, a single illustration of what the conditions of their appointment too frequently actually are. In 1865, invitation was issued, on behalf of the Government of South Australia, to candidates in this country for the office of Physician-superintendent of the Government Asylum at Adelaide. The printed circular issued by the Government agent in this country, containing

reputation for their knowledge and capability of teaching are chosen by the senate, proposed to and appointed by Government, ... guided by the advice of men able to judge of the merits of the candidates proposed."

[1] So far as concerns, at least, Natural Science Chairs, I have offered certain detailed observations on this subject in the 'Scottish Naturalist,' v. i. (1871), pp. 62, 72.

details for the information of intending or possible candidates, contained the following unsatisfactory and discouraging intelligence. The amount of salary was not specified. Probably it was the purpose of the Government to make the best *bargain* it could with any man willing to accept office? The salary—probably some bagatelle under £500 a year—was not to begin until the arrival of the superintendent-elect at Adelaide was officially reported to the authorities there. £100 was the allowance for outfit and passage. There was no pension, but "a fixed gratuity of one month's pay for each year of service on retirement;" that is to say, that, assuming a salary of £600 at the time of retiral, he would receive the munificent sum of £500 for ten years' service, or £1000 for twenty years—in other words, not one year's proper emolument! No separate house was to be provided, and the colonial surgeon was *ex officio* to be his superior or inspector—an officer probably without any special experience of the insane, or of hospitals for their treatment.[1] A gratifying series of inducements to offer to any young man, with even the most ordinary prospects of an *assistantship* in Old England! Had the South Australian Government aimed at securing the services of a man of the most ordinary or commonplace qualifications, it should have offered a salary of £1000, to begin from the date of appointment in this country, with superannuation at the rate of at least two-thirds of the total value of office at the time of retirement; £200 for outfit and passage, separate residence, and a proper status in regard to all the colonial authorities, including the colonial surgeon. In short, the circular of the South Australian Government was an instructive illustration of the absurdity of colonial authorities, in expecting even moderately good men for their appointments, in the absence of all proper inducements.[2] The result of such circulars and of such conditions of appointment is, that—with the single exception of Dr Manning, in New South Wales (who qualified himself for his office by an inspection of the most recently constructed lunatic asylums of Britain, the United States, France, Belgium, and Germany, and by the publication of an exhaustive report, showing how thoroughly he had availed himself of his singular opportunities for observation)—I know of no colonial lunacy appointment that has been in all respects either what was desirable for the colony, or what was expected by its local authorities.

He, then, will be most foolish who accepts such an office as that contemplated by the present Government of New Zealand, without a clear and satisfactory understanding beforehand of all the future, as well as present, details of his appointment; including a proper *definition* of all his duties, and of his relations to the General Government on the one hand, and to the authorities of the Provincial Asylums on the other; the amount of his salary, with its periodical or other increment, and the date of its commencement; the amount and conditions of his superannuation allowance; the amount and regulation of his travelling expenses; the allowance for outfit and passage; the provision for annual or other holidays, or for illness or other unavoidable absence from duty; for library and museum furnishings, or for the books, plans, and other documents necessary for consultation or reference.

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[1] The awkwardness and injustice of such an arrangement was pointed out by the "Commissioners of Inquiry on the Lunatic Asylums of New South Wales," in their report of 1855, p. 9; and in the evidence of Dr Campbell, of the Tarban Creek Asylum, contained in the appended "Minutes of Evidence," p. 66.

[2] In this Adelaide case, the result was, that the gentleman appointed did not remain long in office; he very soon returned to this country; and is now superintendent of one of the numerous county asylums of England.

VI. *Constitution of Lunacy Boards in Europe and America.*

My previous remarks have had reference exclusively or mainly to the individual commissioner or commissioners in lunacy, to be appointed in each of our colonies. But it is desirable to add a few notes on the varying constitution of *Boards of Lunacy* in Britain, the continent of Europe, the United States, and in those British colonies which, in any form, already possess such boards or their supposed equivalents.

The most *fully equipped* Board of Lunacy, and in this respect a model for other countries, is that of *England*, which consists of a chairman, ten commissioners, six of them paid, three of whom are medical and three legal;[1] a secretary, and a staff of clerks.

In *Scotland*, the Lunacy Board consists of a chairman, four commissioners, two of them paid and medical, the other two (unpaid) legal, two deputy-commissioners, both medical, a secretary, and three clerks, besides a messenger or porter. The Scotch law also makes provision for *district inspectors*, but only one appointment has yet been made, so far as I am aware, under the statute, viz., in Forfarshire, a county that possesses two excellently-managed public asylums. Hence it would appear, that such local appointments are not considered desirable or necessary by the county authorities or the general public of Scotland.[2]

In *Ireland*, two medical inspectors constitute, with three clerks, a "Board of commissioners for the erection and control of lunatic asylums."

In *France*, there is or was an "Inspecteur-général du service des aliénés" (Dr Rousselin in 1867), for the whole of France, as well (apparently) as local (district) inspectors. Thus, there is an inspector-general of asylums in the prefecture of the Seine (Dr Girard de Cailleux), who has his headquarters in Paris.

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[1] I can understand the advantage of having barristers, or lawyers of any class, on a lunacy board; but I cannot see nor admit that they are such suitable inspectors of asylums as medical men specially trained by their previous experience for such duties. In England, the medical and legal commissioners visit in couples, one representative of each profession; the best possible arrangement, undoubtedly, if a board contains *paid legal* inspecting commissioners.

[2] It is an anomaly in the case of Forfarshire, that a gentleman, probably without special knowledge of lunatic asylums or their inmates, is called upon to supervise establishments conducted by men of such experience and repute as Drs Howden and Rorie,—establishments, moreover, that are twice a year visited by the central or general lunacy commissioner.

In *Belgium*, there are "inspectors of asylums," resembling apparently, in their status and duties, those of France; while the far-famed *Gheel* has its own *different grades of inspectors*, non-medical as well as medical.

In *Norway*, the "Board of Control" of the State Asylum is more like our local boards of asylum directors than our boards of lunacy. Its members visit the said asylum twice a month, and have duties of a much more minute kind in regard to inspection than the committees of management of most public asylums in either of the three kingdoms. I have elsewhere described its constitution and functions.[1]

In the *United States* of America, a central or general government board of lunacy is greatly wanted, were it only to collect into one annual report the statistics of insanity and of lunatic asylums in states so numerous and so differing in climate and other characters as those which compose the great American republic. That such a board does not yet exist is probably due to the opposition of the physicians of the various state or other public asylums throughout the Union, who point to the faulty working of the English and Canadian boards as a ground for their non-approval. To these local authorities, who exercise much greater public influence in America than do their brethren in this country, the idea of a supervising board of *any* kind is obviously most unpalatable. In 1864, the veteran Dr Ray, the well-known author on the "Medical Jurisprudence of Insanity," published an essay on "American Legislation on Insanity," which was "virtually a report drawn up by him as chairman of a committee appointed by the Association of American Asylum Superintendents."[2] He indicates the evils arising from the tyranny or improper interference of central boards (p. 577), and shows how much mischief has been done in England by over-legislation (p. 578). Dr Gray, the well-known editor of the "American Journal of Insanity," and head of the New York State Asylum at Utica, in the same journal tells us why any form of board of control over the state asylums is unpalatable in all the states (p. 583); and criticises severely the operations of the English and Canadian Lunacy Boards (p. 585). But the objection of American asylum superintendents to the establishment of a board or boards of lunacy in the United States, seems to attach simply to the supervision of the public asylums, which as a whole are well managed, and require no inspection of such a kind.[3] They offer no objection apparently to the supervision of the insane *not in asylums*, whose condition is as bad perhaps as that of similar classes of the insane in any other part of the world.[1] In truth, there is, I believe, no country in the world which so much requires a central board, as well as local boards, of lunacy, as the United States of America, in order to the proper supervision of the insane *not in asylums;*[2] and it is one of the most prominent and serious defects of the lunacy system, in many respects so admirable, of that republic, that no such public bodies as yet exist.

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[1] "Insanity and Lunatic Asylums in Norway." Reprint from the Quarterly Journal of Psychological Medicine, April 1858, pp. 42, 44, and 45.

[2] It is quoted in the Journal of Mental Science, vol. x. (1865), p. 576.

[3] *Vide* paper on "American Hospitals for the Insane compared with those of Britain." Edin. Med. Journal, Dec. 1870, p. 517.

In 1863, a Commission on Insanity was appointed by the legislature of the *State of Massachusetts*, and its report was published in 1864. "The Commissioners conclude their report by advising the appointment of a *permanent Commission in Lunacy*, wielding powers similar to those of its English prototype."[3] There can be no doubt that such a board *ought to be* forthwith appointed in such a state; but, up to the present date, no such board has been established, and there seems small likelihood of its speedy establishment. The work of supervision of the insane in asylums is, however, now undertaken in Massachusetts by the Board of State Charities,[4] which is composed of seven unpaid members—the chairman being Dr S. G. Howe, of Boston, the well-known writer on idiocy; a visiting agent, general agent, and secretary,[5]—all salaried, but with most inadequate salaries, considering the amount and nature of the work which devolves upon them; and a staff of deputy agents and clerks. The work of inspection, which in England devolves on the Lunacy Commissioners, falls here apparently upon the general agent and secretary. The powers of the Board are "to investigate and supervise" the state asylums or other public receptacles for the insane, "and to recommend such changes and additional provisions as they may deem necessary for their economical and efficient administration."[6] It can transfer confirmed and incurable cases from the state hospitals to asylums for the chronic insane, *e.g.*, that at Tewksbury. But the Board of State Charities has too much *other* work to do to have time for the supervision of the insane *not in asylums;* its powers *quoad* the insane are absurdly restricted, and its whole operations as a board of lunacy are open to adverse criticism.[1] Moreover, the provision made for the supervision of the insane in Massachusetts is so cumbrous and defective that we are told that, by a law of 1864, no less than four commissions were organized, most unnecessarily, to do only part of the duties that are discharged in Britain by a single board of lunacy.[2]

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[1] See what Dr Alexander Robertson, of Glasgow, has said on this subject in his "Notes of a Visit to American Asylums." Journal of Mental Science, vol. xv. (1870), p. 85. His observations and reflections led him also to advocate the establishment of a Central (or General Government) Board of Lunacy (p. 89). His suggestion, however, was that it should be temporary, and composed of the leading asylum superintendents of the various states.

[2] If we may believe the revelations of the inner life of certain American asylums, as given by the authoress of "Behind the Bars," published in Boston in 1871, and reviewed in the Journal of Mental Science, vol. xvii. (1872), p. 571, these asylums are in more need of supervision by a central board than are either the private or public asylums of our own country.

[3] Journal of Mental Science, vol. xii. (1867), p. 138.

[4] The inspection of all state charities by one board here and elsewhere has been used as an argument for merging the Board of Lunacy in Scotland in the Board of Supervision!

[5] The constitution of the Board is given in the above-quoted Report, p. 188.

[6] Second Annual Report of the Massachusetts Board of State Charities, 1866; Introduction, p. xiv.

In the *state of New York*, a similar "Board of State Charities" has recently been established. In certain other states of the Union there is but one inspector of asylums or commissioner in lunacy, *e.g.*, in *Vermont*. The "Commissioner of Insanity" for the state of *California* (Dr Wilkins) last summer (1871) made a tour of inspection of European asylums, including those of Britain. Such tours of inspection are common among American alienists, at the instance, and frequently at the expense, of enlightened governments or boards of managers, when contemplating reforms in their lunacy arrangements, or even when simply desirous of keeping them on a par with modern opinion and modern progress. Thus, besides Dr Wilkins, I have, at Perth, had visits from Dr Pliny Earle, of the Massachusetts State Asylum at Northampton; the Baron Mundy, a self-constituted Austrian lunacy reformer of the most radical kind; Dr Salomon, of the Swedish Central Asylum at Malmö; Dr Manning, of New South Wales, whose name has been already more than once mentioned; besides special public or private commissioners from Russia, India, and other parts of the world.

"The Association of Medical Superintendents of American Institutions for the Insane" fulfils part at least of the functions of a national board of lunacy for the United States, issuing its codes of suggestions or instructions, on the model of which (apparently) the similar codes issued by the Lunacy Boards of the three kingdoms have been framed. They are based in all these cases on the accumulated experience of asylum physicians.

There is a "Board of Commissioners"[3] in *Nova Scotia*, but its constitution and duties place it in the category of the boards of directors of British asylums, or of the Board of Control of the Norwegian State Asylum, rather than in that of British Lunacy Boards. In *Canada* there formerly existed a "Board of Inspectors of Asylums and Prisons." But since the colony was subdivided into the provinces of Ontario and Quebec, or Upper and Lower Canada, separate inspectors of asylums have been appointed for the two provinces. The "Inspector of Asylums for Ontario" makes a report—resembling that of the English and Scotch lunacy commissioners—on the asylums visited, which report—as is common in England and Scotland—is quoted at length in the annual reports of the local institutions. Thus, in the reports of the Toronto Asylum (for 1869, p. 3, and 1868, p. 3) the inspector's report is printed, and the report of Dr Workman, the physician-superintendent, is addressed not to a board of managers or to Government, but to the said inspector. The operations of the Canadian Board inspectors have been severely criticised by the asylum physicians of the United States,[1] and it certainly would appear that Canadian lunacy arrangements for the supervision of the insane illustrate, or have in the past illustrated, the folly of British colonial governments in appointing incompetent persons to unnecessary offices; for it is most unnecessary and most invidious to place over a veteran such as Dr Workman of Toronto, some favourite of the Government authorities, who is probably totally without lunacy experience or other qualifications for so exalted an office.

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[1] I am indebted (I believe) to Dr Edward Jarvis, of Dorchester, Mass., not only for a bound set of reports of the Massachusetts Board of State Charities, but for other publications of the same Board, as well as suites of the annual reports of the various public or state lunatic asylums.

[2] Second Report of Board of State Charities (1866), p. 204.

[3] Report of the Provincial Hospital for the Insane, Halifax, Nova Scotia, for 1869, p. 9.

Of all the lunacy boards, or forms of lunacy board, of which I have knowledge, by far the best is that of *Scotland.* It is to be recommended as a model for the imitation of other countries mainly on the following grounds:—

(1.) The great attention which it very properly pays to the supervision of the insane *not in asylums.*

As I have already explained, I believe the great use of lunacy boards to be the supervision of this class of the insane, whereas in all other countries in which such boards exist in any form, and especially where they consist of only *one inspector* of asylums, so far as I am aware, time is mainly or wholly occupied by the visitation of public asylums, which have local boards of management, and are fully officered by competent persons. In the Scotch board the time of two medical deputy-commissioners is wholly occupied in the visitation of the insane who are *not in asylums.*

(2.) The attention which is given in the Annual Reports (which are much more philosophical or scientific—of higher practical interest—than those of either of the sister kingdoms) to all subjects bearing on the *prevention of insanity,*[2] a matter of infinitely greater importance than the mere supervision of existing asylums, or even the establishment of new ones where they are much needed.

It is sometimes sneeringly pointed out that the labours of the

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[1] *E.g.*, by Dr Gray of Utica, in Journal of Mental Science, vol. x. (1865), p. 585.

[2] This is a subject that has apparently attracted more notice among American than among British alienists. The late Dr Brigham, who was the medical head of the New York State Asylum between 1842 and 1849, directed public attention to it in various of his official reports, *e.g.*, in the Third Annual Report of said asylum (1846), p. 48.

English Lunacy Board have had no effect in checking the progress of lunacy, or of increasing the proportion of recoveries. But if a lunacy board has a proper conception of its duties, if it possess the proper powers, and command the confidence and co-operation of the public, of Government, and of the authorities of local asylums, its efforts certainly *should tell in the course of years* on the rate of production of insanity as well as on the proportion of recoveries and deaths.

(3.) The proportion of paid *medical* labour in the constitution of the Board—out of six commissioners (including deputy-commissioners), four of them being medical.

(4.) The proportion of honorary *legal* members; and the fulness of the secretarial staff.

At the same time I do not profess to regard the Scotch Lunacy Board as perfect, and I have no doubt its members themselves do not claim for it perfection. Nor would I recommend its literal imitation in a young British colony. There is not the least hope, I fear, of any such colony consenting to salary with adequate emoluments four medical commissioners, or to employ a special secretary and staff of clerks for lunacy administration. Nor would such an outlay be necessary or expedient in the early stages of a colony's growth. On the other hand, I have no doubt as to the propriety of the appointment of fully-officered boards in the older of the United States, and in such British colonies as Canada and New South Wales.[1]

Part Second.

REVIEWS.

Seventh Annual Report of the Sanitary Commissioner with the Government of India, 1870. Calcutta: 1871.

Cholera in Southern India. A Record of the Progress of Cholera in 1870, *and Résumé of the Records of Former Epidemic Invasions of the Madras Presidency.* By Surgeon W. R. CORNISH, F.R.C.S., Fellow of the Madras University, Sanitary Commissioner for Madras. Madras: 1871.

Hindu View of Cholera. A Lecture by GOLAUB SING, M.D. London: 1871.

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[1] A lunacy board for New South Wales was strongly recommended by the "Commissioners of Inquiry on the Lunatic Asylums" of that colony, in their Report of 1855, p. 9.

Epidemic Cholera. By Edward Ambrose Fitzgerald, Surgeon Bengal Medical Service. London: 1871.

The Indian Medical Gazette. Calcutta: November and December, 1871.

As usual, Dr Cunningham's Report gives us a considerable amount of fresh evidence, and new information, upon important questions of pathology, collected and stated in a truly candid, scientific spirit. Some improvements have been made in grouping the statistics, for example; and those from the hill stations and convalescent depots have been formed into separate groups.

In some of the hill stations the results compare favourably with those in our own military stations at home. The general mortality of the European force in the Bengal Presidency for the year 1870 is 21·90 per 1000. "As regards mortality," writes Dr Cunningham, "Bengal contrasts most unfavourably with the other presidencies, giving an average death-rate for the ten years of 29·98 per 1000, compared with 21·46 in Bombay, and only 20·27 in Madras. Great portion of the excessive loss is to be ascribed to cholera, which caused an annual average of 9·24 deaths per 1000 in this presidency, compared with 4·80 in Bombay, and 2·56 in Madras; but even excluding the cholera rate, Bengal, with 20·74, still occupies the highest place; then comes Madras, with 17·71; the returns from Bombay, 16·66, being the most favourable of all. The higher death-rate of Bengal is due, as has been already stated, mainly to cholera, but fevers and heat apoplexy both have had a marked influence in the result."

The mortality amongst European children in the Bengal Presidency was rather more than double the mortality of the mean of children of the same age in England.

We have some observations on the development of cystic disease in cattle, and some experiments made by Dr Oliver, which are not likely to be repeated in this country. Pieces of beef, studded with cysticercus, were given to natives of low caste, after explaining to them the probable consequence of eating. The conclusion Dr Oliver arrives at was, that "the safety or otherwise of eating cyst-infected meat simply depends on the manner in which it is cooked. If this meat is thoroughly done, and presents no rawness when cut into, the measles appear like little nodules of coagulated albumen, are doubtless perfectly inert, and may be eaten with impunity."

In the appendix there is a valuable report by Dr Bryden upon the influence of age and length of service as affecting the mortality and invaliding of European soldiers, which is thus summed up by Dr Cunningham:—

"It may be stated, then, as a fact fully proved by statistics, that new regiments contribute to sickness, mortality, and invaliding in a proportion very much in excess of the ratios for those who have been a longer time in India. Whether this is to be attributed to the process of what has been termed acclimatization, or to the inexperience of new arrivals, who are less able to take care of themselves in a new country, or to the fact that the material of which these new arrivals are composed is to a great extent of an inferior quality, which rapidly succumbs to climatic influences,—is a question which cannot be easily determined. But whatever may be the true explanation of the results—and probably they are more or less influenced by all these causes—there can be no doubt that the facts are of great practical importance, and deserve careful consideration, not only in determining how regiments on their first landing may be best cared for, but also how far it may be expedient to garrison India with men enlisted for short periods."

A great portion of the volume is occupied by statistics upon cholera, and no new theory or explanation has been evolved; further evidence is given upon disputed points as to the method of diffusion and pathology of this mysterious disease. Dr Douglas Cunningham, a young officer specially deputed to make investigations upon cholera in India, gives us a report which occupies nearly a hundred pages. It is illustrated by some good engravings from careful drawings of fungi observed under the microscope. The result is entirely negative. No fungus nor other form of vegetable life seems to be peculiar to the dejections of cholera. A number of observations were also made to test Pettenkofer's subsoil theory, but without any definite result.

In reviewing the Sixth Annual Report last year, we pointed out that the theory which seeks to trace all or most cases of cholera to specific contamination of the water-supply, was opposed to some careful observations made in the Punjaub, and this year it may be enough to add Dr Cunningham's appreciation of these and other similar observations.

"On a careful examination of all the facts, I cannot, therefore, admit that there is any evidence to prove that cholera-tainted water was the most influential of all the conditions which favoured the propagation of cholera in the Punjaub in 1869. Much more precise and positive proof must be adduced before this doctrine can be accepted as a truth. That good pure water is one of the most important requisites for health I fully admit, and, as I have frequently urged, there is no more pressing reform required in cantonments, cities, and villages, than the provision of a really good water in ample quality, and defended in every way from impurities; but the value of this reform can be insisted on just as forcibly, and indeed with even greater justice, without attaching to it a theory which, so far as the facts regarding cholera in India are concerned, as yet rest on no basis whatever. Facts may hereafter be adduced to show that this water theory is more or less true; but until such evidence is produced, the assertion that cholera is propagated mainly by cholera-tainted water remains unproved. This is one of the great questions to be investigated by the Sanitary Commissioners with the utmost care and attention; but such an investigation can never be conducted with the hope of any satisfactory results, if it be assumed at the outset that certain theories regarding the disease have already been established as facts—that cholera cannot be diffused except by human agency; that cholera evacuations contain the special virus by which disease is spread, and that this virus acts on any community by gaining access to the water-supply. If the truth of these statements is believed by the inquirer to have been already demonstrated, very little remains for him to learn. But if, on the other hand, he enters on the study of an epidemic with his mind altogether unbiassed, he will find difficulties and anomalies innumerable, which require the most patient and painstaking investigation."

We are glad to perceive that Mr Cornish, as well as Dr Cunningham, has determined not to espouse any particular theory in the meantime, but to aim at faithfully reproducing evidence, and pointing out its bearing upon the diffusion of cholera. It is not because we do not set a value upon the details in Mr Cornish's Report that we cannot enter upon any discussion of them at present. Mr Cornish points out some cases in which he thinks Dr Bryden has mistaken the method of invasion of epidemic cholera into the Madras Presidency. The following paragraphs will give the reader some idea as to the nature of his objections to Dr Bryden's theories about the agency of the monsoons in spreading cholera over India. Before the scientific world can accept a theory that seeks to explain the spread of cholera to places so geographically remote as Peshawer and Singapore by the agency of monsoon winds, it will seek to know something about the direction and rate of progress of such winds in connexion with the progress of cholera. It is manifest that the same winds that take cholera from Bengal to the Punjaub, cannot be instrumental in sowing the seeds of cholera over Burmah and China in the south-east.

"The greatest obstacle to the reception of the monsoon theory of cholera invasion is, I think, the unquestionable fact that cholera is not checked in its movement by the prevalence of a strong monsoon wind blowing against its line of advance.[1] The narrative of Scott of the 1818 epidemic, and the record at pages 18 and 20 of the 1859 and 1864 invasions, are quite clear as regards the movements of former epidemics. The southward and slightly eastward advance of the 1869 invasion in this presidency was certainly not checked by the south-west monsoon, nor did it travel any faster when the monsoon turned round in its favour. That monsoon moisture favoured the multiplication of the cholera miasm is quite probable, but there is no evidence that prevailing winds checked or hurried the invasion. It is a fact, too, beyond all question, that the southward advance of this same epidemic from Tinnevely to Ceylon, in 1870, was not checked by the strong southerly winds then blowing. It follows, therefore, that there is a movement of cholera independently of strength or direction of winds, and that aerial influences cannot be so powerful as indicated by Bryden."

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[1] The reader ought to bear in view that Dr Bryden is of an opposite opinion on this point, interpreting facts in a different way.

The following summary of Mr Cornish's views as to the movement of cholera will, coming from so able an observer, and one who has had so good a field of observation as Mr Cornish, be read with attention :—

" *1st.* That an epidemic wave from the natural home of cholera reaches the Madras Presidency after affecting the Central Provinces, a portion of the Bombay Presidency and the Deccan, and rarely if ever by the shorter route along the Coromandel coast.

" *2d.* That these epidemic waves of cholera recur at uncertain intervals, but generally once in four or five years.

" *3d.* That the direction of the line of cholera advance in this presidency is, generally, from north to south, and that the invading epidemic never entirely halts until the extreme southern limit of territory (including the island of Ceylon) has been reached.

" *4th.* That the south-west winds do not stop or retard this southern advance, nor do the north-east winds hasten it.

" *5th.* That monsoon moisture has some relation to the seasonal intensity, and possibly also to the movement of cholera, although prevailing winds do not hurry or check its advance into unoccupied territory.

" *6th.* That the period of time occupied in the invasion of Southern India has varied from six months to two years.

" *7th.* That the increased rapidity of communication by railways and steamboats has not hastened the advance of cholera, the last epidemic in 1869–70 having taken four times as long to reach Ceylon as did the great epidemic of 1818."

A Hindu View of Cholera is a very clever pamphlet. Although it only occupies sixteen pages, the author raises so many important questions in so suggestive a manner, that we regret our space does not allow us to follow him out. A few quotations will show that the pamphlet is worth buying and reading.

"A further affinity and resemblance is shown between cholera and the febrile diseases, in the facts, first, that their grander evolution in man, and the general history of epidemics, have but small connexion with contagion; and, secondly, the equal truth, that the earlier cases of these so-called different diseases do show occasional proof of spreading by contagion. The relative proportion in which these two qualities are shown varies in amount; the contagious property (*e.g.*) is high in scarlet fever, low in cholera. A parallel history is seen in disease communicated by poisoned water. The Broad Street, Soho, cholera of 1854, showed cases undoubtedly traced to water contamination; but the greater history of that outbreak was coincident with a general increase of cholera in the metropolis, and was independent of any known poison in water."

Take now the following Hindu view of our sanitary efforts in India:—

"Again as to water, from childhood to old age, we drink of the same tank of surface-drainage water; our fathers see their great-grandchildren around them; nor is cholera associated with such tanks. A hundred million beings throughout their lives drink such water, and such has been the practice for thousands of years. The occurrence of *cholera bears no grand relation to such customs.* Cholera has existed and held a definite course, not yet fully seen or known; but it is quite childish to associate it chiefly with the water drunk. Such reasoning is 'seeking the greater in the lesser worlds.' We ask only the favour that your officers in India do not meddle with our tanks. I have known good tanks spoiled by zealous theorists ordering their cleansing—that is, the removal of the vegetation which grows in them. The women of ancient villages and towns have, for thousands of years, gone down into the tanks, pushed aside the green surface-vegetation from a small space, and drunk water; it is the only water they ever use; it is drunk pure and simple; we are a nation of water-drinkers. Those towns and villages often remain free from cholera for long periods. The 'form' of cholera lies deeper in man's defective composition and correlation.

"Your scientific officers in India, with childlike avidity, seize any obviously associated circumstance, and call it a 'cause of cholera.' This narrow view of a great subject, this ever seeking causes, seems to us one of your greatest errors of method; it is that which prevents your splendid activity and search from having better results; it is why your mighty and systematic labours in building such masses of statistics are almost barren; you want the true 'idea.' . . .

"That quinine, arsenic, iron, etc., are prophylactic of ague is a proof that the disease which they prevent or cure is actually of a series or partship, or relationship in nature, with such substances. With the periods involved, *with the mode of action*, we have no concern; our business is to see facts, and, by analogy and recognised alliances, place our facts in circles of wider generality. We learn from these instances *true* prophylaxis; that is, the 'supplying to the system those elements and correlatives it has lost.'

"However vast the periods, and however involved, under which the system has evolved to the capacity for a diseased relation, we know that the remedy may be but a small quantity of some single element, close at hand; the negro in the West Indies is so correlated to the climate, that his system cannot take on the change, whose symptoms are yellow fever; his co-ordination may have taken ages to grow, but we cannot doubt but that a potential prophylaxis exists, in some single form, which, given to the unacclimatized

European, would effect in a week that which ages have done for the negro. No kind or power of analysis can detect a difference between the vaccinated and unvaccinated, or between him who has had syphilis or typhus and him who has not, or between the acclimatized European and him liable to yellow fever, etc. Yet these changes, infinitely small in amount, are absolutely prophylactic."

Mr Fitzgerald adopts Dr Bryden's theory, that cholera is an air-borne miasma, generated in Lower Bengal, and wafted along by the prevailing winds to Upper India and other distant regions, and declares his conviction that the outbreak of cholera over Upper India and the Punjaub in 1867 had no necessary connexion to the great fair at Hurdwar, from which it was argued that it spread as from a focus. He considers the remarkable immunity of the servants, as well as the patients, from other diseases, in the General Hospital at Calcutta, a sufficient proof of the non-contagious nature of cholera. In this hospital no special precautions are taken to isolate cholera patients, and 1100 cases have been treated during the thirteen years ending July 1868 out of 24,000 European patients. Yet, out of this large number, eight only had been seized with the disease in the hospital, and of these eight, seven had been admitted with diarrhœa. Mr Fitzgerald at one time used the opio-stimulant plan of treating cholera, but at last "was compelled to give it up in sheer despair." Indeed, he considers that many of the worst sequelæ of cholera are at least much aggravated by this plan of treatment. He regards it as a bad sign when the vomiting and purging are suddenly arrested. In treating the disease he uses strychnia and quinine, and administers acid drinks, such as vinegar, lime-juice, or sulphuric acid dissolved in a large quantity of water. Altogether this is a sensible pamphlet, and gives a good deal of information in a readable form.

The numbers of the *Indian Medical Gazette* kindly sent to us by Mr Macnamara, contain an account of a remarkable outbreak of cholera which commenced at Secunderabad on the 24th of May 1870 amongst the 18th Hussars and their wives and children. Eighty-five people out of 549 were seized with cholera, and 39 died. There were two other European regiments, besides artillery, in the station, but they entirely escaped from cholera for nearly a month after, though there were cases in the bazaars. The whole stress of the epidemic fell upon the Hussars during the first two or three days. The regiment had been six years at Secunderabad. It would appear that their health had deteriorated, and that they were living in barracks which had been condemned as unhealthy as far back as 1852. From a careful examination, it was ascertained that they were clean and well drained. Mr Macnamara regards this as a case where the water-supply was poisoned with cholera dejecta. There is, however, no evidence of such an occurrence, unless we are content to hold the outbreak itself as sufficient proof.

Lectures on the Principles and Practice of Physic, delivered at King's College, London. By Sir THOMAS WATSON, Bart., M.D., F.R.S., etc. The fifth edition, revised and enlarged. London: Longmans, Green, and Co.: 1871. 2 vols., pp. 1980.

The Science and Practice of Medicine. By WILLIAM AITKEN, M.D. Edin., etc. The sixth edition, greatly enlarged, remodelled, revised, and many portions rewritten. London: Charles Griffin and Co.: 1872. 2 vols., pp. 2234.

A System of Medicine. Edited by J. RUSSELL REYNOLDS, M.D., F.R.S.E., etc. Vol. III. London and New York: Macmillan and Co.: 1871. P. 995.

WE have the highest authority for stating that it is impossible to put new wine into old bottles without injury to the latter, and though it may seem somewhat derogatory to Sir Thomas Watson to liken his work to a "leathern bottell," the comparison nevertheless holds good. More than thirty years have elapsed since first these lectures were delivered, and nearly thirty years since they were first published in a connected form, while it is quite fourteen years since the last edition was given to the world. During the long period of time which has elapsed between the issue of the first and of the fifth editions of this work, a whole generation has passed away, and the changes which have taken place both in the science and practice of medicine have been indubitably—for various reasons which are self-evident—more important and more extensive than have ever previously occurred. Under these circumstances it would be expecting a miracle to suppose that any man, however learned, logical, and unprejudiced, could so far forget or ignore the tuition of his youth and the acquirements of his riper years as not to endeavour to mingle the old with the new, and so form a patchwork admirable in proportion to the skill of the author and the raciness of his language, but defective in truth in proportion to the deviation originally made from that basis from which both new and old are derived. If any one at all conversant with the modern pathology of inflammation and its results, as contained in the writings of Lister, Virchow, Cohnheim, Stricker, etc., as well as with its modern treatment, will take the trouble to compare the chapters on this subject in the present edition with those on the same subject in the last edition, he will be at no loss to perceive the difficulty that has been felt in attempting to reconcile old beliefs with new doctrines, and he will also fully recognise the futility of the attempt. In one respect Sir Thomas Watson's work may be regarded as in advance of the age, inasmuch as he has unreservedly accepted Dr George Johnson's theory both of the pathology and treatment of cholera. This perhaps is hardly to be wondered at, considering the intimate relations between the two men, and the fact that Dr Johnson has largely assisted in the re-editing of this work. Dr Johnson's method of treatment has, however, signally failed in every quarter of the globe, even when tried by those most anxious to do it justice and sanguine of its success, while his pathological theory is, as we have already shown (June 1867, p. 1111), unsound as to the supposed facts upon which it is based, and still more unsound in the ratiocination upon these facts. We regret that Sir Thomas Watson has seen fit to adopt Dr Johnson's views, and thus to mar the usefulness of a work which in some respects is unrivalled: its fluency and beauty of language make it as delightful to read as a standard novel; while it is perhaps not the less suited for a text-book, that the views enunciated must sometimes come into collision with those taught,—for the true object of tuition is not to cram with certain dogmata, but to educate, by drawing out the faculties of observation and reasoning in those taught.

Fourteen years ago Dr Aitken published a very meagre and unsatisfactory text-book, consisting of 756 pages, from which many important subjects were wholly omitted; it has now reached its sixth edition, and comprises upwards of 2000 pages, from which no subject of any importance has been omitted, and which contains very much in relation to pathology and diagnosis which will be in vain sought for in any other text-book in any language, and which indeed is only elsewhere to be found in separate treatises. It is by no means light reading; the tomes are large, their contents weighty, and the manner of presentment inartistic and heavy; nevertheless there is perhaps no work in the English language more indispensable for the practitioner and student. From his position, as Professor of Pathology in the Army Medical School, what may be termed military medicine and pathology, naturally bulk largely, but the diagnosis of the various diseases is no less effectively put, and all the modern means and appliances to that end are duly described and considered; and if his chapters on treatment read somewhat like extracts from Waring, they err mainly on the side of fulness, and are only deficient in that generalization which is not to be acquired but by long practical experience in the treatment of disease,—a defect which is supplied by the teacher to the student, and which is in a great measure rectified by the personal experience of the practitioner himself. We have great pleasure in recommending Dr Aitken's work as a very full exposition of the present state of the science and practice of medicine, though the views propounded—as, for instance, those bearing on the pathology of inflammation and of nervous diseases—are not always of the most advanced type; and we hope that in the future the author will, by alteration, condensation, and rearrangement, endeavour to make his work more accurate and readable, without impairing its utility.

The third volume of Reynolds's System of Medicine completes the section on Diseases of the Digestive System, and includes an account of diseases of the respiratory system. As might naturally be expected in a work embracing such a variety of contents, it contains papers of very varying importance; while from the number of authors employed, some divergence of opinion has of course been inevitable. It is, of course, the duty of the editor to see that this obtrusion of individual opinion is not so excessive as to deprive the work of its true cosmopolitan character as an exponent of the views presently held in regard to pathology and therapeutics. The preface we think sufficiently indicates the doubts which the editor himself has as to the manner in which this duty has been discharged in regard to at least one of the subjects discussed; we confess to sharing these doubts. But with this exception, and excepting also the fact that one or two short articles have been introduced upon unimportant subjects which would have been better treated in subordinate paragraphs, under a more general heading, we think this volume fully maintains the high character which the work generally is already well known to possess.

On Clinical Education. By FURNEAUX JORDAN, F.R.C.S.: Being the Introductory Address to the Clinical Session, 1871-2, at the Queen's Hospital, Birmingham. London: J. and A. Churchill.

INTRODUCTORY addresses are almost invariably trite and commonplace. This can hardly be avoided; and the only consolation is that their triteness, which wearies those who have to read them, having read many before, is probably freshness, novelty, and delight to one set at least of the hearers—the first-year students, who, with note-book and pencil, endeavour to appropriate the salient points of the address, and probably remember much of it to the end of their lives.

This lecture is one that must have left some trace on the hearers' memories, as it is terse in expression, tolerably original in thought, and here and there almost epigrammatic. We rejoice to see that Mr Jordan encourages question and answer. "The pupil should not let his teacher look at, or touch, or say or do anything without asking the reason why—without eliciting the principle which guides the look or touch or question," p. 10. One or two good aphorisms we may quote. "The man who is indifferent to pathology is dead to science: he is a retailer of remedies, and an empiric in the worst sense," p. 11. "The ignorant cannot distinguish the momentous from the insignificant." "Work is the first and greatest element of success." "Work at difficulties: easy things take care of themselves."

We congratulate Mr Jordan on having got over his inaugural address, which ought to be a thing done only once in a lifetime; for, from personal experience, we can say, having written one, there really can be nothing left to put in a second.

Fecundity, Fertility, Sterility, and Allied Topics. By J. MATTHEWS DUNCAN, A.M., M.D., L.R.C.S.E., F.R.C.P.E. and F.R.S.E., Lecturer on Midwifery in the School of Medicine; Physician for Diseases of Women to the Royal Infirmary; Physician to the Royal Maternity Hospital, etc.

WE welcome with pleasure a second edition of a work which is already out of print, and which is so replete with vast funds of material interesting and useful alike to the scientific obstetrician, to the physician, the physiologist, and the political economist. This edition is, in a great measure, merely a reprint of the former, published in 1866, with some important additions in the form of footnotes. But, besides this, we have added to the body of the work a good deal of new matter, which appeared for the first time in the author's recent volume on the "Mortality of Childbed and Maternity Hospitals;" and also a new chapter on the "Practice of Predicting the Day of Confinement," which has already appeared in the pages of this Journal. By far, however, the most important and the largest contribution of original material to the present volume partakes of a somewhat novel character, consisting as it does of a reprint from the *North British Review* of almost the whole of a critical article upon the first edition of this work. This article extends over 65 pages of the work, and as the total amount of new material in the present edition fills only 120 pages, it therefore is page by page really more than half of the new matter added. Now, though angry people might be inclined to carp at this confessedly uncommon method of book-making, we unhesitatingly affirm that, in introducing this paper, Dr Duncan has made a very valuable addition to his work, and has conferred a great boon upon his readers. The article referred to is an exceedingly able and lucid exposition of the most difficult portions of our author's work, and, in truth, adds to it a not inconsiderable amount of really new, interesting, and valuable matter, both speculative and statistical. More especially will, we imagine, most of the readers of the work consider that portion of this criticism which deals with Professor Tait's mathematical contribution to the volume before us as peculiarly valuable, since the writer lays before his readers the general drift of the Professor's section, but in doing so adopts a much less abstract and, consequently, much more readily understood method. The critic, though on the whole exceedingly favourable to Dr Duncan's views, yet differs from him in regard to the cogency of some of his deductions from his tables. More particularly is this the case in regard to the conclusion which Dr Duncan is led to draw from his tables in the early part of his work bearing upon the question of relative and initial fecundity, to the effect, that while the wives-mothers in the first quinquenniade of childbearing life (fifteen to nineteen inclusive) are more fecund as a mass, the fecundity of the individuals follows a different law, and attains its maximum in the next quinquenniade (twenty to twenty-four inclusive). This difficulty has been already referred to at considerable length in the original notice of the work in the Journal for January 1867, so that we can only recur to it very briefly. Suffice it to say, that in this point Dr Duncan is at variance with Tait's first law, that "fecundity at various ages is proportional to the number of years a woman's age is under fifty," and that, the author's statistics and reasoning notwithstanding, we do not think that he makes it at all clear or probable that the greater intensity of fertility in those wives-mothers fertile during the first quinquenniade of married life would account for the proved greater fertility of the mass of wives during this period, if the individuals were not also more fecund. The reviewer explains to our mind most satisfactorily the source of Dr Duncan's error to lie in his tables of common, and more particularly of initial, fecundity during this period, failing to give account of the fecundity, or liability to become pregnant, of those wives-mothers who, while married within the first period of five years, do not give birth to a living child till one or two years into the second period. These wives-mothers, though strictly belonging to the first period, are by Dr Duncan's tables classified along with the second, and consequently augment the apparent fecundity of the second period, whilst they diminish that of the first period. We fully expect that when Dr Duncan finds leisure, which he expresses the hope to, for reconsidering this whole matter with better data, his final conclusions will be quite different from his present, and will show, in accordance with Tait's laws, that both the fecundity and fertility of the individual and of the mass begin as maxima at the commencement of childbearing life, and gradually become less as age advances. But this writer makes altogether an exhaustive analysis of the main features of Dr Duncan's work, leaving very little indeed to be said regarding it without repetition, so that our task is rendered almost unpleasantly easy. Besides discussing the merits of our author's views, the critic incidentally strikes out upon new trains of thought which are suggested during the discussion, for which we beg to refer the reader to the article itself, certain that it will well repay perusal. More particularly we would instance his remarks upon the propriety of the parents of idiots ceasing by abstinence to be the means of bringing more such wretched beings into the world, as the chances are that when idiots are once produced the subsequent children will be similarly affected; the importance of instructing young people of both sexes more completely regarding the possible consequences and risks entailed by them in entering upon the married state, so as to prevent disappointment afterwards; his discussion of the bearing of the known laws of fecundity and fertility upon the propriety or otherwise of early marriages.

Professor Tait, in his portion of the work, brings forward some valuable new tables relative to the average actual fertility of married women in England, Scotland, Ireland, and Sweden, which appear to him to show that, taking the fertility for Scotland at 100, that for England is 86, for Ireland 98, and for Sweden 117. This is additional proof of the existence of a marked discrepancy in regard to the fertility of married women in England and Scotland, which, considering the almost identical circumstances and conditions of the two nations, is equally curious and inexplicable.

In his chapter upon the "Practice in the Prediction of the Day of Confinement," a subject very useful to the obstetrician, our author discusses, and we think successfully controverts, the recently advanced views of Dr Ahlfield in favour of limiting the ordinary period of pregnancy in the human female to 271 days. Dr Duncan, while pointing out the impossibility of arriving at accurate knowledge of the duration of a state the commencement of which it is impossible to determine with certainty, since we can never ascertain the exact period of conception, declares himself as still favourable, from his examination of the statistical data bearing upon the point, to the view that the natural average time of duration of pregnancy is most probably nearer to 275 days—the period long ago assigned to it by Harvey—than to 280 days, the period which has hitherto found most favour in this country, and was so ably advocated by Montgomery. Proceeding on this hypothesis, Dr Duncan's method is directed, when taking the disappearance of the catamenia as the point of departure, to ascertain the 278th day from the conclusion of the menstrual period, as hé finds from his data that 278 days make up the most common average period between the disappearance of the menses and the supervention of labour, three days or more being required for the interval between insemination and impregnation. This he recommends to do by fixing upon the same day of the ninth calender month, counting onwards from the date of disappearance of the catamenia, and adding three or five days to the date thus found, according as the period excludes or includes February, so as to determine the most probable day of the supervention of labour. But he does not fix this day as the middle of the week, as is usually done, but the middle of the fortnight.

The most curious and important bearing of this method is, however, the fact, that when the results of its application to 153 carefully observed cases by Dr Duncan have been tested by Professor Tait according to the law of probable error, they very nearly satisfy the requirements of the law; or, in other words, the avoidable errors are nearly eliminated, and the method shown to be about as perfect as the conditions of the problem will allow of.

Considering the annoyance that miscalculation in this matter so frequently entails upon both patient and doctor, every contribution proposing to diminish the chances of mistake is very acceptable to those members of the profession engaged in obstetric practice, and ought to be put to the test of experience.

Of nearly the whole of the other portions of this work we have already had opportunity to express our opinion, either when noticing in the Journal the first edition of this work, or that on "Mortality of Childbed and Maternity Hospitals." And besides, as we have already stated, the critical article embodied in the book treats of almost every point in it which is legitimate subject of criticism—such, for example, as Table XL., which we had marked for notice in reading the work, wherein the author, from the difficulty of obtaining sufficiently accurate data, is led to deduce the average interval between marriage and the birth of a first child in the case of wives married at different ages in months, whilst his original data takes in no lower units than the year. Clearly, the omission of fractions of the year in the data, however difficult it is to obtain such, cannot but convey a very great degree of inaccuracy to the result, and make the table only a very wide average guess.

However much objection may be raised against the more strictly scientific or first part of the work, it must clearly be set down to the scanty sources of the supply of the data, and all must allow that the author has made the very best of the material which he had within his reach, and must admire the spirit of fairness and scientific thoroughness with which the numbers are collated, combined, and interrogated from so many different points of view, without any attempts at forcing from them conclusions other than those which they legitimately warrant.

The part of the work bearing upon Childbed-mortality and the Mortality of Puerperal Fever, etc., cannot be said to be executed with the same convincing accuracy as the first part of the work. But this is referable to the nature of the subjects, and not to the author's method of treating them. We apprehend, however, that much more has to be done in this department before the author's views obtain the hold upon the profession which their merits entitle them to. There is such a tendency in the professional mind unconsciously to over-estimate success and under-estimate failure, that when brought face to face with hard facts men are apt to use the old argument—"So much the worse for your facts."

But we must conclude, by expressing our high estimate of the value and importance of the work as a whole, which all will, we think, allow to be the production of one of the most philosophical and scientific living writers upon obstetrics and subjects thereto allied of whom these islands can boast.

Die Lehre von den Zwillingen. Von LUDWIG KLEINWAECHTER. Prag: Haerpfer: 1871.

A Treatise on Twins. By LUDWIG KLEINWAECHTER. Prague: Haerpfer: 1871.

Dr KLEINWAECHTER is already known to us by his paper on spontaneous evolution. This is a record of experience in the lying-in hospital of Prague, and the remarkable and novel facts and views which it lays before the obstetrical profession are well worthy of consideration from their theoretical and practical value.

The same author, proud of belonging to the great and famous Prague School of Midwifery—and justly proud, if all we hear of it be really true—now comes before the profession with a valuable monograph on twins, which he dedicates to his master the late Seyfert, Professor of Midwifery there.

It is an old idea with us, which we never despair of realizing, that no subject is more tempting for a monograph than that of twinning. As a fine landscape may contain a great variety of scenery, so this topic contains theory and practice; physiology, pathology, and therapeutics. The treatise of Kleinwaechter is a valuable contribution to this subject. It is not exhaustive, however, as its German origin may lead many to suppose. There is still ample room and range enough for a larger and grander monogragh; and this circumstance is no discredit to Kleinwaechter, who seems aware that he might have made more of the subject. As it is, Kleinwaechter's book is very useful, and should be studied by all interested in obstetrics.

The subject is divided into thirteen chapters, which give a good idea of the scope of the work. They comprise the frequency of twins, their production, and the structure of the afterbirth; the production of monsters, especially those produced by coalescence; twinning in malformed uterus, superfecundation and superfetation, twin pregnancy, disturbance of twin pregnancy, birth of twins, treatment of natural birth of twins, birth of twins with long intervals, disorder in the course of twin births, birth of double monsters and malformed twins, weight and development of twins, prognostics for mother and child in twin cases.

On the Pathology and Treatment of Gonorrhœa. By J. L. MILTON, Surgeon to St John's Hospital for Diseases of the Skin. London: Hardwicke, 192 Piccadilly: 1871.

THIS work is a revised and abridged edition of a work which was reviewed in our pages when it first appeared, but it contains a large amount of new material.

It is useful as giving a sort of bird's-eye view of the various plans of treating gonorrhœa from the days of Sydenham downwards, with some carefully-constructed tables illustrating the results of the different methods of treatment.

The author's own method of abortive treatment in cases which admit of such management is: 1. A carefully-given injection of nitrate of silver, five grains to the ounce, allowed to remain in the urethra for several minutes; 2. A calomel purge, followed by purgative salts, till several loose stools are induced—very little diet to be given, except warm tea and gruel; 3. After each stool an injection of sulphate of zinc, three to five grains to the ounce; and after each injection the penis should be bathed in warm water as hot as can be borne; 4. The injection to be gradually strengthened up to ten grains to the ounce.

In cases which do not admit of abortive treatment—and these are all cases, except very few—he orders a new prescription, which he considers of great value, consisting of acetate of potass, in combination with spirit of nitric ether, given in compound spirit of juniper and peppermint water. For quantities, merits, etc., we must refer to the work. This is to be combined, in some cases, with the use of injection, *given by the surgeon himself*, and gradually increased in strength as required.

A curious and laboriously-compiled table, illustrating the relation of orchitis to weather, has a certain amount of interest, if not much practical value.

On Dactylitis Syphilitica; with Observations on Syphilitic Lesions of the Joints. By R. W. TAYLOR, M.D. Reprinted from the *American Journal of Syphilography and Dermatology.*

WE do not often notice mere reprints; but this is a very carefully done monograph on a rare lesion—the information regarding which is drawn partly from the author's own observations of cases, and partly from the descriptions of some Continental surgeons. The descriptive and pathological part is better done than the practical, the diagnosis and treatment receiving only two pages out of the thirty-two of which the pamphlet is composed.

Darwinism: Being an Examination of Mr St George Mivart's Genesis of Species. By CHAUNCEY WRIGHT, Esq. London: John Murray.

MR MIVART'S book has, from the position and well-known ability of the author, attracted more than the usual share of criticism that falls to the lot of most writers on this subject. Bringing forward difficulties which do not at once occur to the minds of many who were previously inclined to accept the theory of natural selection, there can be no doubt that its tendency was to shake the faith of such in the stability of a theory which has undoubtedly been gaining ground rapidly of late years. The author of the pamphlet now before us, who is evidently a disciple of Mr Darwin, attempts, and, as we think, successfully, to demonstrate the fallacy of many of Mr Mivart's arguments. The Examination is ably conducted by one who has evidently devoted much time and attention to the consideration of the theory of natural selection.

The subjoined extract will put the reader in a position to judge for himself of the style of our author, and may, perchance, enable some, burdened with the weight of current theological misrepresentation, to perceive that the reception of the theory of natural selection does not necessarily imply abandonment of faith in the existence of the Deity:—"Mr Darwin has not, in his works, repeated with sufficient frequency his faith in the universality of the law of causation, in the phenomena of general physiology or theoretical biology, as well as in all the rest of physical nature. He has not said often enough, it would appear, that in referring any effect to 'accident,' he only means that its causes are like particular phases of the weather, or like innumerable phenomena in the concrete course of nature generally, which are quite beyond the power of finite minds to anticipate or to account for in detail, though none the less really determinate or due to regular causes. That he has committed this error appears from the fact that his critic, Mr Mivart, has made the mistake—which nullifies nearly the whole of his criticism—of supposing that the theory of natural selection may (though it need not) be taken in such a way as to lead men to regard the present organic world as formed, so to speak, *accidentally*, beautiful and wonderful as is confessedly the haphazard result' (p. 33). Mr Mivart, like many other writers, seems to forget the age of the world in which he lives, and for which he writes, the age of 'experimental philosophy,' the very standpoint of which, its fundamental assumption, is the universality of physical causation. This is so familiar to minds bred in physical studies, that they rarely imagine that they may be mistaken for disciples of Democritus, or for believers in 'the fortuitous concourse of atoms,' in the sense, at least, which theology has attached to this phrase. If they assent to the truth that may have been meant by the phrase, they would not for a moment suppose that the atoms move fortuitously, but only that their conjunctions, constituting the actual concrete order of events, could not be anticipated except by a knowledge of the natures and regular histories of each and all of them—such knowledge as belongs only to omniscience. The very hope of experimental philosophy, its expectation of constructing the sciences into a true philosophy of nature, is based on the induction, or, if you please, the *a priori* presumption, that physical causation is universal; that the constitution of nature is written in its actual manifestations, and needs only to be deciphered by experimental and inductive research; that it is not a latent invisible writing, to be brought out by the magic of mental anticipation or metaphysical meditation. Or, as Bacon said, it is not by the 'anticipations of the mind,' but by the 'interpretations of nature,' that natural philosophy is to be constituted; and this is to presume that the order of nature is decipherable, or that causation is everywhere either manifest or hidden, but never absent."

One other extract must suffice. Speaking of the variability of animals under domestication, our author expresses himself as follows:—"Mr Mivart says, 'Mr Darwin abundantly demonstrates the variability of dogs, horses, fowls, pigeons, but he none the less shows the very *small extent* to which the goose, the peacock, and the guinea-fowl have varied.' Mr Darwin attempts to explain this fact as regards the goose, by the animal being valued only for food and feathers, and from no pleasure having been felt in it on other accounts. He adds, however, at the end, the striking remark which concedes the whole position, 'but the goose seems to have a *singularly inflexible organization.*' The translation is begun in the author's italics, and completed a few pages further on, where, recurring to this subject, he says:—'We have seen that Mr Darwin himself implicitly admits the principle of specific stability, in asserting the singular inflexibility of the organization of the goose.' This is what is called in scholastic logic, *Fallacia a dicto secundum quid ad dictum simpliciter.* The obvious meaning, both from the context and the evidence of the expression 'singularly inflexible,' is, that the goose has been much less changed by domestication than other domestic birds. But this *relative* inflexibility is understood by our author as an admission of an *absolute* one, in spite of the evidence that geese have varied from the wild type, and have individual differences, and even differences of breeds, which are sufficiently conspicuous even to the eye of a goose."

Enough, we trust, has been said to show that Mr Wright's review will repay careful perusal. We recommend it to the attention of those interested in the subject.

A Review of Darwin's Theory of the Origin and Development of Man. By JAMES B. HUNTER, M.D. New York: Appleton and Co.

THIS Review appeared originally in the Journal of Psychological Medicine. Occupying nearly twenty pages of print, the reader will find in it a very careful and condensed abstract of Mr Darwin's last work on "The Descent of Man." The author does not appear to have any opinions of his own on the subject; if he has, he avoids expression of them.

An Introductory Text-Book of Zoology for the use of Junior Classes. By ALLEYNE NICHOLSON, M.D., D. Sc., etc. Edinburgh: Blackwood and Sons.

THIS is an excellent little work, the value of which school teachers will not be slow to appreciate.

Written throughout clearly and concisely, with a careful avoidance of all unnecessary detail, it cannot fail to be largely made use of as a text-book at a time when natural science is regarded as one of the essential branches of education in almost every school. The matter throughout is thoroughly reliable, and, so far as consistent with the strictly elementary character of the work, brought up to the present state of the science. It has, moreover, the advantage of being profusely illustrated.

The importance of a work such as this, in the diffusion of accurate notions regarding the structure and classification of the animal kingdom among the people, cannot be over-estimated. We hope, before long, to see it in general use.

Part Third.

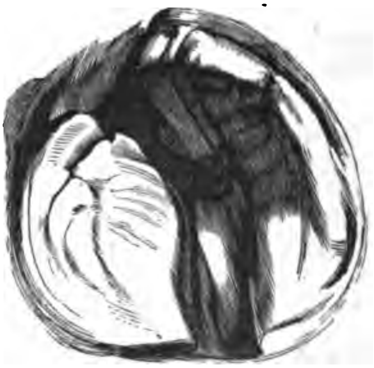
MEETINGS OF SOCIETIES.

OBSTETRICAL SOCIETY OF EDINBURGH.

SESSION XXXI.—MEETING VI.

Wednesday, 14*th February* 1872.—Dr MATTHEWS DUNCAN, *Vice-President*, in the Chair.

I. *Dr James Young* exhibited a CAST OF CONGENITAL MALFORMATION OF THE PALATE AND SUPERIOR MAXILLARY BONE. In this case the cast was taken by Mr Wilson, dentist, with considerable difficulty, the child being only six weeks old at the time.



There is a deficiency of the right side of the palate, consisting of a long deep fissure running through it, terminating anteriorly in a wide notch of the superior maxillary bone, about an inch in breadth, with complete hare-lip, opening into the nostril of the same side. The child was born at the full term of gestation, and appeared otherwise healthy and well developed, though somewhat weakly. In this case the child can suck, and is thriving well, being able to compress the nipple between the tongue and half of the hard palate.

II. *Dr Bell* read the following paper by Dr S. Lawrence, Montrose, entitled A Case of Large Congenital Cranial Tumour:—

It may not be without interest to the members of the Edinburgh Obstetrical Society to have briefly submitted to their notice the particulars of a very rare congenital tumour, which operated as a cause of difficult labour in a case which recently occurred in my practice.

On the 22d November last, I was called about noon to attend Mrs A., aged 43, in labour with her sixth child. I had attended her in all her previous labours, which were not only unaccompanied with any difficulty, but exceedingly easy and expeditious. Seven years had elapsed since her last confinement. On my arrival I found that the liquor amnii had been discharged early in the day, that the os uteri was rather more than half dilated, and that the pains were unfrequent and feeble. I could not at first fully satisfy myself as to the presenting part of the child, as it lay so high in the pelvis, and, so far as it could be felt, seemed so devoid of the ordinary globular contour of the fully developed fœtal head. In the course of an hour, however, all doubt on this point was set at rest by the left ear coming within reach of the finger. Shortly after three o'clock P.M., as the pains were somewhat feeble, I administered a dose of infusion of ergot, which by-and-by had the effect of increasing both their strength and frequency. Notwithstanding this, the descent of the head was extremely slow, which, considering its felt smallness, and Mrs A.'s former easy confinements, seemed to me somewhat puzzling. On making another examination, and passing my finger along from the vertex to the occiput, I came upon a soft bulging structure apparently connected firmly with the head, and extending up into the pelvis farther than I could trace it. That this was some morbid development seriously hindering the delivery of the child there could be no doubt. But having never, during an obstetric experience extending over more than thirty years, encountered any similar cause of difficult labour, and being unable to call to mind any recorded case resembling it, I was rather perplexed, both as to the nature of the structure and the proper course to pursue under such novel circumstances. Failing the powers of nature to accomplish delivery after putting them fairly to the test, it seemed to me that I must either then have recourse to the forceps, or attempt to effect a diminution of the attached tumour by puncture. Cephalotripsy also claimed to be regarded as a possible and unavoidable necessity, but evidently only if these other expedients proved abortive. By half-past four o'clock, the pains having been for some time pretty strongly expulsive, and the further progress of the head apparently arrested, I began to make the needful preparations for the application of the forceps, which I had resolved on as my first mode of attempted operative help. I had just taken one of the blades into my hand, with a view to its introduction, when a powerful pain expelled a large morbid mass, which was followed almost immediately after by the head of the child, to which it was attached, and within a few seconds more by the entire body. It would not be easy to convey by any description a correct idea of the very extraordinary appearance which the child, as now seen in its entirety, presented. The body and limbs were those of a child at the full period of pregnancy, the head and face being disproportionally small, as if arrested in their development between the sixth and seventh months. But the most remarkable phenomenon was the tumour above referred to. It was a large pear-shaped pendulous mass, springing from the upper and posterior part of the head, and falling down over the occiput and superior portion of the neck—a truly rare and curious *chignon* of nature's own handiwork. It was about six inches in length, at its neck about the thickness of an ordinary wrist, its greatest breadth being between four and five inches. Over a considerable part of its surface, especially towards its most depending portion, it presented a deep livid hue, not unlike what is met with in spina bifida. I regret that I was unable to do more than make a very hasty examination of it. The child, a female, was born dead (apparently it had died during delivery), and it was needful to excise or amputate this morbid appendage, to permit of the nurse rightly performing her task of dressing and *laying out* the body. This operation was performed *sans ceremonie*, by the readiest domestic instrument that came to hand, and I was thus enabled, although cursorily, to inspect the substance of the tumour, and ascertain its attachments. When cut into, it presented an appearance which, in colour and consistence, will be best described by likening it to softened placenta. In different parts of it were cells or cavities (without, however, any lining membrane) filled with bloody serum. There was a free communication between the interior of the tumour and the cavity of the cranium through the posterior fontanelle, over which it was implanted, and which was decidedly of more than usual magnitude. It would have been of much interest to have carried the examination farther, so as to ascertain both the minute structure of the tumour itself, and the state of the brain as to development and normal condition. But under the circumstances of the case, I was reluctantly compelled to remain satisfied with what I had observed in the hurried inspection I had made. And had it been practicable, which I regret it was not, to have obtained a photograph of both child and tumour *in situ*, I need not say how much I would have been thereby aided in my present attempt to convey to others a correct idea of their remarkable appearance. I am disposed to regard the case now briefly narrated, as probably unique in its haracter, having been unable, so far as my research or inquiry has extended, to find on record any one bearing a remote resemblance to it. In the *Edinburgh Medical Journal* for March 1867, a case is given by Dr Cappie, which was brought by him under the notice of the Obstetrical Society, of a large congenital cystic tumour, which he met with in his midwifery practice, occupying the left side of the neck of the child, and extending from the ear to the clavicle. Not only, however, did that tumour present no impediment to the progress of labour, but in its attachments and general character it was entirely different from the one now described. There will very probably exist a diversity of opinion as to the precise class or kind of morbid formation, to which the one it was my experience to meet with ought properly to be referred. But its attachment to the cranium, its communication with the cranial cavity through a preternaturally large posterior fontanelle, implying arrest of the ossific process in the parietal and occipital bones, the large quantity of sero-sanguinolent fluid found throughout much of its interior, and the peculiar purplish hue of its integumentary covering, all seem so many points in its history, indicating a close analogy between it and ordinary spina bifida. And viewing it in this light, it is perhaps not too fanciful to regard it as pathology coming forward to countersign and authenticate the modern doctrine, which represents the cranial bones in their aggregate and arrangement as constituting merely an expanded vertebra.

By way of concluding the history of the case just recorded, I may farther remark, that on interrogating my patient as to whether there had occurred anything peculiar in her condition or feelings during the course of her pregnancy, which might plausibly be looked upon as either cause or effect of this remarkable morbid development, I was informed by her, that the only noticeable circumstance was the unusual strength and liveliness of the fœtal movements.

Dr Keiller said he had communicated a somewhat similar case to the Society some years ago. The tumour hung down the back and was covered with skin; he tried to excise it at its narrowest part, namely, at the base of the occipital bone; on cutting into it, however, he found that there was a cyst within a cyst, and he had to give up the operation. The child died the following day in convulsions. These cases differ from anencephalous ones, in having all the bones of the head developed.

Dr Ritchie remarked that this case was quite distinct from the one recorded by Dr Cappie, where the tumour was on the neck, and had no communication with the cranium.

Dr Bell mentioned several cases of a like nature, which are described by Dr Home in his System of Surgery.

Dr Matthews Duncan said that numerous cases of the kind had been recorded by various authors, and that he himself had seen several. In one case, the tumour was the size of an orange, and hung from one side of the head. The child lived for several days. In another, the child lived for a week; the cyst was tapped, and the fluid, a few hours after being drawn off, was found to be full of vibriones. The tumour, which was as large as the head, was a true brain cyst, and extremely thin. The cyst communicated by the aqueduct of Sylvius with the brain.

III. A CASE OF SMALLPOX FROM AN OBSTETRICAL AND MEDICO-LEGAL POINT OF VIEW, by Dr Rattray, Portobello.

After remarks by several of the Fellows, the Council were instructed to draw up a report on the case.

Report by Council.—In regard to the case read to the Society by Dr Rattray on 14th February 1872, the Council beg to report as follows:—

Your Council understand that the charge against Dr Rattray was, that he used a public conveyance for a patient who it was suspected might be suffering from incipient symptoms of smallpox. It was stated to the Society that no appearance of eruption was seen till the day after that on which the conveyance was used. Under these circumstances, it is the opinion of the Council that Dr Rattray could not have known that the patient was labouring under smallpox, and that, therefore, such a charge against him could not be well founded.

The Council recommended the Society to express sympathy with Dr Rattray in the painful position in which he has been placed by the charge against him, which they, on the grounds above stated, regard as unjustifiable.

Part Fourth.

MEDICAL NEWS.

MEETING OF THE GENERAL MEDICAL COUNCIL.—The fifteenth session of this Council was opened at 2 P.M. on Thursday, 29th February, at 32 Soho Square—the President, Dr Paget, in the chair. There were also present, Dr Bennett, Mr Quain, Dr Acland, Dr Humphry, Dr Embleton, Dr Storrar, Dr Alexander Wood, Dr Andrew Wood, Dr Fleming, Dr Macrobin, Dr Thomson, Dr A. Smith, Mr Hargrave, Dr Leet, Dr Apjohn, Sir D. Corrigan, Bart., Dr Quain, Dr Sharpey, Sir W. Gull, Bart., Dr Parkes, Dr Stokes, and Dr Francis Hawkins, Registrar. Sir Robert Christison was prevented by illness from attending this session of the Council. The President delivered his opening address, in which he stated that the Council had been called together at this unusual and inconvenient season in accordance with their own order, made on 10th July last, to receive the proposals of the bodies for conjoint examination, and to consider what steps, if any, should be taken to carry out the resolution of the Council in favour of such combinations. In deference to the presence of a recently elected member, the President then went over the various steps taken by the Council in regard to this matter, which we need not recapitulate. The Business, Finance, and Registration of Medical Students Committees of last year were then unanimously re-elected. The Returns of the Army Medical Department were then received, and, on the motion of Dr Alexander Wood, remitted to a committee. The Registrar then read a correspondence with the Home Office in relation to the case of Mr Kempster, considered at the last meeting of the Council, in which the Home Secretary expressed his intention of introducing a bill to amend the law in regard to Death Registry. The Registrar then read replies in regard to the formation of conjoint examining boards from the national examining bodies; the Royal Colleges of Physicians and Surgeons of London agreeing to a scheme of conjoint examination for a double qualification, which is adopted unreservedly by the Universities of Oxford, Cambridge, and Durham, but protested against by the Society of Apothecaries of London, and also objected to by the University of London, on account of legal difficulties in the way. After two hours' discussion, the following motion by Dr Thomson was agreed to:—"The Council approve of and sanction the conjoint scheme of examination submitted by the Royal College of Physicians of London, and of the Royal College of Surgeons of England, to which the University of Oxford, Cambridge, and Durham have given their adhesion; the Council have at the same time to express the desire that means may be found by which the University of London and the Society of Apothecaries may be enabled to join in the scheme so as to render it a complete scheme for a conjoint board for England." A communication was then read from the Commissioners in Lunacy, regarding the illegal detention for several days of a private female patient in a lunatic asylum, on the certificate of a Dr J. D. Blake of Taunton, who was not registered according to the Medical Act, and a motion by Sir D. Corrigan was carried, "That the attention of the Commissioners be drawn to clauses 38 and 40 of the Medical Act (1858), under which it is declared that no certificate required by any Act now in force shall be valid, unless the person signing the same be registered under that Act, and that 'any person who shall wilfully pretend to be, take, or use the name and title of a physician, etc., shall, upon a conviction for any such offence,' pay a sum not exceeding twenty pounds." The Solicitor of the Council (Mr F. W. Farrer) was, on the motion of Dr Bennett, directed to take the necessary steps to prosecute a student, "alleged to have been guilty of forging a certificate of having passed his preliminary examination at the Hall of the Society of Apothecaries, by which he obtained admission on the Students' Register." On the third day the communications from the various examining bodies of Scotland in regard to the establishment of a conjoint examining board were discussed in connexion with a letter from Sir Robert

Christison on the same subject, and also with two similar memorials transmitted by Professor Gairdner of Glasgow, and Professor Sanders of Edinburgh, both signed by several of the leading professors and practitioners of the respective cities. The discussion was somewhat stormy, and was for that day terminated by the adoption of a motion by Sir W. Gull, expressing "regret that no scheme had been framed and submitted to the Council by the medical authorities in Scotland for establishing a conjoint examining board." On the fourth day, however, Dr Parkes again brought up the subject by a motion, threatening that, unless the Scotch examining bodies had succeeded in forming a conjoint board for Scotland before 1st January 1873, the Council would endeavour to obtain a legislative enactment, under which a conjoint board may be constituted. This threat very naturally roused the hot northern blood, and Dr Parkes was told very plainly that Scotland would not be dragooned into taking action, and though open to reason and argument, would never yield to threats while its motto remained *Nemo me impune lacessit.* Ultimately a motion by Sir W. Gull was carried, "That a notice of the Resolution of March 2 (Sir W. Gull's former motion of regret) be sent to the medical authorities of Scotland, together with a statement that the Council still urges upon them the desirability of a conjoint scheme of examination, and expresses the hope that such a scheme as the Council can sanction may be submitted to the Council by 1st July 1872." The communications from the examining boards of Ireland were then considered, and a motion by Dr Humphry carried, "That the Council expresses its regret that no scheme has been framed and submitted to the Council by the medical authorities in Ireland for establishing a conjoint examination. The Council has considered the resolutions of the conference of representatives on this question, and hopes that a scheme for a conjoint examination, which the Council will be able to sanction, may be submitted to the Council by 1st July 1872."

Dr Acland then moved and carried the appointment of a committee "to consider and report whether the General Medical Council has power to make rules for the special education of women, such as may entitle them to obtain a qualification to be certified by the Council. And that the committee do further report for what purpose such qualifications, if any, should be granted; what are the most desirable means for educating, examining, and certifying in respect of them, with special reference to midwifery, the management of medical institutions, dispensing, and nursing." The fifth day was occupied partly by a discussion on this motion; partly by an ineffectual attempt to pass motions intended to hurry on the formation of the English conjoint board, so as if possible to bring it into action in January 1873; partly by an abortive attempt by Dr Acland to get a committee appointed for drawing up regulations common to all the conjoint boards "as to the time and mode of the commencement of the examination of the conjoint boards, and *the cessation of the examinations of the other examining boards;*" and partly by matters of minor moment,—the reception of the report of the Finance Committee, showing a balance in favour of income for the year 1871 of £878, 19s. 6½d., or upwards of £200 in excess of the favourable balance of 1870; and the carrying of a resolution that the executive committee obtain premises "where the meetings of the Council can be held, and the general business carried on with comfort and convenience." The customary formal votes were then passed, and the proceedings terminated.

The following is a copy of the memorial transmitted to the Council by Professors Gairdner and Sanders:—

"The undersigned having been informed of the recent proceedings on the part of the Universities and Corporations in Scotland, with a view to the formation of a conjoint board of examination at the instance of the Medical Council, feel bound to indicate their dissent from these proceedings on the following grounds:—

"1. The reason alleged for such proceedings in the first instance, viz., the attainment of 'uniformity of qualification,' *i.e.*, a fixed minimum of medical knowledge and skill on the part of candidates, secured through examinations conducted upon a precisely similar plan by examiners making precisely similar requirements, appears to the undersigned an object neither desirable nor attainable.

"2. Even were the object in question a desirable one, it evidently cannot be secured by the measures proposed. It is inconceivable that one board sitting in England, another in Scotland, and a third in Ireland, each board being of very complex constitution, and holding examinations in different places, without any concert or intercommunication, could possibly secure "uniformity" in any real sense of the word.

"3. The immense number of candidates which would have to be examined in each division of the kingdom by the conjoint boards, would make it absolutely necessary either greatly to enlarge the number of examiners and to subdivide them into companies (of course with a still further loss of 'uniformity' as regards results), or to work one set of examiners continuously day after day for long periods, with the practical effect of reducing their operations to a wearisome routine, incompatible with other professional pursuits on the part of the examiners, and entailing great hardship upon candidates by want of accommodation with the sessional arrangements of the principal medical schools.

"4. The expense of examinations so conducted would be, if thrown upon the candidates, a very serious addition to the cost of medical education and qualification, without any commensurate results as regards the security of the public.

"5. The undersigned are decidedly of opinion that if, for the public security, an additional examination requires to be introduced over and above the nineteen at present in operation, the cost of such additional examination should in any case not be thrown upon the candidates, nor yet on the existing examining bodies, but should be defrayed by the State, as representing the public.

"6. The true object to be aimed at, whether in view of the public interest or that of the medical profession, is (in the opinion of the undersigned) *not* uniformity, nor yet a fixed minimum of qualification, but the watching and stimulating the existing examining boards through a systematic inspection, conducted under the auspices either of Government or of the Medical Council.

"7. The undersigned profess themselves willing and anxious to facilitate to the utmost a thoroughly efficient system of examination in the Universities and Corporations with which they are severally connected, and would gladly welcome the visits of any inspectors appointed on the part of the public to secure, as far as may be, efficiency on the part of all such examining bodies in the performance of their important duties. In the case of the Universities, such a system of inspection would be quite in accordance with the system already introduced by the Universities Act for Non-Professorial Examiners. The undersigned are thoroughly satisfied with this system, and believe that an extension of it would do good.

"8. The details of such inspection should, in the opinion of the undersigned, be arranged between the State, as representing the public, and the Medical Council, as representing the medical profession.

"9. The undersigned desire it to be understood that, so far from objecting to a 'conjoint' system of examination, they would cordially welcome any voluntary joint action of different boards with the view of diminishing the labour and responsibility of examination, and the expense and trouble of it to the candidates. The objection that they entertain to the proposed system is, that it would not diminish either the expense or the trouble to the candidates, but would, on the contrary, increase both; while, by removing the responsibility of the practical part of the examination in some measure from the existing boards, it would tend very much to reduce all medical examinations to a low dead level, and would render it nearly impossible to improve them in accordance with the demands of advancing medical knowledge."

The letter from Sir Robert Christison to Dr Paget adopted in the main similar arguments against the possibility of ensuring uniformity of examination, and pointed out that the proper course of action for the General Council under present circumstances, was, "1. To persuade the several Royal Colleges to combine their examining boards in each division of the kingdom, so that no man should be licensed who had not undergone a complete examination, both in medicine proper and also in surgery; 2. To induce the Universities to receive from without an adequate number of examiners, not only to attain the same object, an examination '*in omnibus*,' but also to put an end to the outcry against candidates being examined only by their own teachers; and, 3. To establish a proper inspection of examinations, under the powers conferred by the Medical Act upon the Council." Similar views were recently advocated by Professor Gairdner in a lecture to the Glasgow University Medical Society, on "The present Critical Aspect of Medical Examination in relation to Medical Teaching," in the course of which Dr Gairdner made the following pertinent observations:—"What are the functions of examinations, and what are their objects and uses? In answering the question, put in the most general terms, he would be inclined to say that examination had a double function. It might be regarded in the first place as a system of police for dismissing, or rejecting, or eliminating incompetent men; and, in the second place, it might be regarded as a testing system for registering the results of education, so as to make itself felt by the learner and the teacher alike throughout the process of education. It was therefore obvious that the two functions were of the greatest importance, and also that an examination which was directed exclusively to one of these functions could not be so adjusted as always to fulfil the other to the best possible degree—or rather, by leaving out of sight one of these functions, the examination must be considered as to some extent defective in relation to its whole purpose. The second function was by far the most important, and every movement that tended to divorce the two objects and separate examination as a part of educational machinery from examination as a measure of police, was to be discouraged as tending inevitably, in course of time, to the serious detriment of sound education. He believed that the Medical Council of Education and Registration was at present engaged in a most dangerous experiment —one which had only very superficial benefits to recommend it, and many latent evils, not least of which would be found to be its arbitrary interference with all the Universities of Scotland, and with the teaching bodies all over the kingdom. What they wanted in the examination from a mere police view was to fix a standard above which men would be considered competent, and below which they would be considered incompetent. How were they to get at this? The examination must be conducted by a great number of different men, and it was utterly impossible in an examination by different men, or, as was proposed by the Medical Council, by conjoint boards for England, Scotland, and Ireland, to have a uniform line; and an examination which was founded on this idea of a uniform standard for the whole kingdom, must in the very nature of it be a fallacy, and must break down in practice. Good examiners were not berries that grew upon every bush, and it was a difficult matter to secure such men. Were the conjoint boards to employ teachers as examiners? or were they to set their face against such a plan? Were they to have the same examiners as at present? or were they to thin them out and have fewer, and give them more work? Now, if the examinations were put into the hands of the same men as had charge of them at present, was there any real prospect that the examination would be really different? and if they were not to be materially different, what was the use of all this new system of uniformity? At the very best, the advantage to be gained was exceedingly doubtful; and they were laying the axe as far as in them lay to the whole system, which, in the course of the last twenty-five years, had been operating towards the elevation of the standard of education; and which, during the last five, six, or seven years since the Medical Council was established, had been more extended and improved than it ever was before." Dr Gairdner then directed the attention of the students to a pamphlet written by Dr Lyon Playfair, and a paper in *Macmillan's Magazine* for March, written by Professor Tait, of the Edinburgh University. The lecturer then said that "he was very far from being opposed to the joining of examinations. On the contrary, if that conjunction of examination was not the result of an attempt to reduce them all to one model by pressure exercised by the State, he was in favour of it so far as it would secure to the public the benefits of the energies of the various seats of examinations being centred into one instead of over different bodies. If teachers were not the best examiners, no examining board at the present time could be efficient without them. He was far from saying that teachers ought to be the sole, or the chief, or even the majority of the members of an examining board; and he would be delighted if the University of Glasgow had more assistance from what were called non-professorial examiners than what they had at present. The only obstacle was the want of funds. Under the University Act, they had three non-professorial examiners, who were paid out of the Exchequer; and if the Exchequer would voluntarily pay more, he would be very happy to receive them, but he hardly expected such a boon from the present Chancellor of the Exchequer. Failing that, why should they not have an appointment by the Faculty of Physicians and Surgeons, by agreement with the University, of members of the general body of the profession, to go to the University and concur with the University Professors in examining students, and, upon that conjoint examination, to give licenses of the Faculty as well as the University degree? To such a system he would offer no obstacle, provided it was done as a matter of arrangement between the Faculty and the University, and not as a matter of compulsion, to put the whole examining boards of the country into one general and central board."

[The remark made by Dr Quain in the course of the discussion that "the English scheme did not aim at uniformity, but competence, and that it did not add a new examination to those already in existence, but reduced them to one," seems sufficiently to explain the object of the Council in urging the formation of what it calls conjoint examining boards, viz., the substitution of a *staats-examen* for the separate licenses now in force, which it depreciates in a most uncalled-for manner for the purpose of gaining its own ends. This examination must be carried out by the same men now employed on the separate boards, or by a portion of them, or by men much their inferiors in examining powers, because hitherto unacquainted either with examining or teaching, neither of which faculties are, as a rule, common in the ranks of general practitioners, from amongst whom the new examiners must be selected. This movement therefore cannot secure increase of competence in those licensed, nor therefore increased security to the public; it seems doubtful indeed, from the animus displayed, whether any such result was ever intended, or whether the object aimed at has not been the ruin of the Corporations and Universities, especially of the Scotch bodies, whose degrees have so long and so deservedly taken such a high rank, and been in such estimation both with the public and the profession as to attract candidates from every quarter of the kingdom, and to grind the profession beneath the heel of a centralized and imperial Cockneydom. The voice of the profession has made the Council, but it can also unmake it. *Delenda est Carthago* was in old times repeated till the end was attained; a similar result would no doubt nowadays be gained were we forced to reiterate *Delendum est Concilium Medicum.*]

SIR ROBERT CHRISTISON.—On the 23d of February, this distinguished physician attained his jubilee, having been a Professor of the University of Edinburgh for fifty years, being about the only Professor of that University who has served so long during the three centuries that it has existed. During that term, fourteen professors have served for forty years; Dr Hope, Professor of Chemistry, for forty-nine, and only one other—Professor Jamieson—for fifty years, but he only survived his jubilee a few days. The event was celebrated by the presentation of a sword of honour by the University Volunteer Rifle Corps, of which body Sir Robert has been Captain since its formation; by the presentation of a congratulatory address from the Edinburgh University Club of London—Dr Duckworth, Dr Davy, and Dr Hally being the members deputed to convey the congratulations of the Club; and by a banquet in the evening in the Douglas Hotel, presided over by the Right Honourable John Inglis, Lord Justice-General, and Chancellor of the University of Edinburgh. The banquet was attended by 250 of the most distinguished members of the profession from all parts of the kingdom, and was in every respect a great success.

SMALLPOX still prevails, though it seems decreasing; the deaths during February having been only 319 for the eight principal towns of Scotland, against 461 for January, and 354 for December. In Edinburgh the deaths from smallpox during February amounted to 144, or 25·4 per cent. of the deaths from all causes.

SIR JAMES PAGET, Bart., and Dr MATTHEWS DUNCAN, have been elected Hon. Members of the Royal Medical Society of Edinburgh.

LIST OF GENTLEMEN who competed successfully for appointments as Assistant-Surgeons in Her Majesty's British Medical Service at the Examination at the London University on the 12th Feb. 1872.

Order of Merit.	*Names.*	*Marks.*	*Order of Merit.*	*Names.*	*Marks.*
1.	Magill, J.	2239	7.	Bushe, C. J. L.	1727
2.	O'Donnell, R. W.	1956	8.	Quill, R. H.	1725
3.	Donovan, W.	1885	9.	Slaughter, W. B.	1686
4.	Swayne, C. H.	1795	10.	Brown, D. B.	1675
5.	Tincler, B. M.	1785	11.	Keys, C. W. M.	1675
6.	Browne, A. L.	1775	12.	Stokes, H. H.	1530

THE MORISONIAN LECTURES ON INSANITY for the current year were commenced on the 1st of March, and have been delivered in the Physicians' Hall on Tuesdays and Fridays, during the month, by Dr Arthur Mitchell, one of Her Majesty's Commissioners in Lunacy for Scotland. The first lecture was devoted to a consideration of the curability of insanity. In treating this subject, Dr Mitchell most efficiently employed his unusual facilities for tracing the insane from asylum to asylum, and the result ascertained, that in 12 years 36·6 per cent. have died insane, 31·7 per cent. are still alive insane, and 31·7 per cent. either alive or dead sane; while only 23 patients were for the first time discharged cured after more than three years of treatment, so that if recovery does not occur within the first few months after admission, the case must be regarded as in a great measure hopeless. The other lectures were mainly devoted to a consideration of subjects connected with idiocy, especially in relation to the influence of consanguineous marriages upon its production, which he did not lay much stress upon, as he believed that in Scotland at least 60 or 70 per cent. of such cases were not congenital, but the idiocy was acquired through some one or other of the numerous accidents to which children are liable.

The concluding lecture was delivered on the 19th ult., and consisted of a concise notice of the antiquities of lunacy in Scotland. The lecturer began by reading the Act of Robert I., which, he said, continued to be the only Scotch Act regulating the disposal of the persons of the insane till 1815. It provided that lunatics were either to be kept by their friends or to be put in prison; and its final clause enacted that "gif they (the lunatics) do any evil by negligent keeping, that sal be imputed to their keepers." But Sir George Mackenzie, commenting on the Act in 1699, was of opinion that it would scarcely be right to go the length of hanging a keeper for a murder done by a lunatic. He then gave some further illustrations of the treatment of the insane in olden times, and especially of its legalized inhumanity, and concluded by stating that by far the oldest of Scotch institutions for the insane, was the city Bedlam. After it came the wards attached to the Dumfries Infirmary, built in 1777. In reference to these, he stated that when it was found that twenty patients were received into them fourteen years after they were opened, the fact was regarded as indicating a startling increase of lunacy, and he asked what the people of those times would have thought, if they could have known that in 1870 there would be 265 pauper lunatics belonging to the southern counties in the Dumfries Asylum? After Dumfries came Montrose Asylum, which was opened in 1782, and which in 1821 had 55 patients in it. In 1870 it had 392. The Aberdeen Asylum was the fourth in age, being opened in 1800. The Royal Asylums of Edinburgh and Glasgow followed, being opened in 1813 and 1814. One hundred years ago, he said, all the institutions in Scotland would not have held 50. Even seventy years ago, they would probably not have held much more than twice that number; yet we have now more than 6000 patients in our Scotch asylums.

LETTERS TO THE EDITOR.

THE GRAMMAR SCHOOL, ST KITTS, British W. Indies,
10th February 1872.

SIR,—In the number of your periodical for September 1871 there appeared "Notes on Cases of Yellow Fever in St Kitts, W.I., during 1868, '69, '70. By W. Munro, M.D., C.M., Medical Officer, District No. 1." I now seek for redress in your columns, in the form of *strong reprobation* of what I conceive to be the unprecedented and unprofessional course pursued by Dr Munro in attaching the names of patients to the published notes of their cases. Concerning Case No. 23, which is that of myself, the only true statement is, that it "was a very severe" case; and if you will refer to the paragraph, I think you will see that, were I intending to insure my life, it would be calculated to do me definite injury.

The facts connected with my illness were, that the attack was so severe that I passed beyond ordinary stages of copious black vomit to one in which the black-vomit matter was voided downwards in a decomposed state. My recovery was due, under God, to the unremitting attention and skill of Dr Branch, who, being my intimate personal friend, remained for twenty-one days and nights in my house, attending besides only to his public work and to one other private case of yellow fever. Both by him and by Dr Dinzey, who most kindly helped to nurse me, I was conclusively and utterly given over. So far as remedial agents are concerned, my treatment may be considered to have been confined for the yellow-fever symptoms to sulphuric acid baths, and carbolic acid internally. Of the latter I took more than any one else, and I cannot trace the smallest evil results therefrom. Dr Munro never saw me during my illness or convalescence, and has but a slight acquaintanceship with me.

To give some general notion of what Dr Munro's notes are worth, I will add the following *exposé* of some few misstatements or misleading passages.

"Cases 14 and 15."—Speaking of Dr Branch, it is here said, "He saw the most of the cases up to this time." Quite untrue; and, seeing that out of the first fifteen attacked, nine died, the inference as to Dr Branch is mischievous.

Dr Munro states that there were "*not more than fifty Europeans and Americans*" in the island when the first case of yellow fever occurred. Last year's census gives the joint numbers as amounting to 172; and it will be understating to say, that there were at the time mentioned at least three times as many as assumed by Dr Munro. I can reckon of my own private knowledge a hundred persons of European or North American birth resident in the island at the time.

In the tabulated statement of all the cases which occurred, the black-vomit stage is mentioned in connexion with recovery only in the cases of two children; the obvious inference being that, in other instances of recovery, that stage was not reached—an inference widely at variance with the facts.

Were I at liberty to follow in Dr Munro's footsteps, and deal by name with other cases than my own, I could point out many more statements either incorrect in themselves or misleading as to inference; as I could also others—date of attack, for instance—affecting myself.

So soon as I obtained a copy of your Journal containing the said "Notes," I wrote to Dr Munro, acquainting him with my intention of seeking to have his unprofessional liberties as to people's names exposed in some of the leading medical periodicals. I received a reply intended to be highly sarcastic, while more or less apologetic in garb, but which is simply rude and impertinent; accompanying it was a certificate as to his (Dr Munro's) opinion on the eligibility of my life for insurance, totally inconsistent with his published paragraphs.

Trusting, either in the shape of publication of this letter as a whole or in part, or in any other form which may appear to you expedient, to obtain for myself, and other individuals whose names have been similarly treated without the slightest warrant or authority given to Dr Munro, some redress in your Journal, in whose pages the offence was committed.—I am, Sir, yours obediently,

HENRY W. MARSHAL, M.A. Cantab.,
Principal of the Grammar School, and
H.M. Inspector of Schools in the Island of St Christopher.

My two offices leave me but scant leisure for other matters; and it is only by this mail that I have found time to write the above.

BOROUGH LUNATIC ASYLUM, Newcastle-upon-Tyne,
6th March 1872.

SIR,—In Dr Lindsay's article on Colonial Lunacy Boards, the following sentence occurs:—"In the new asylum for the city of Newcastle-upon-Tyne, the physician's salary (I am told) begins at £250; but rises by £50 a year to £500, his additional allowances being board and lodging, including wine, and three servants." I am sorry to say that this is not the case; my income, etc., being arranged a much more modest scale.—I am, Sir, your obedient servant,

R. H. B. WICKHAM, *Medical Superintendent.*

Part First.

ORIGINAL COMMUNICATIONS.

ARTICLE I.—*Dysmenorrhœa.* By J. MATTHEWS DUNCAN, M.D.

THIS term implies that a natural function is accompanied by unnatural pain. The idea of difficulty is often, and has long been, associated with this disease, but it is not essentially so. Pain is the distinctive indication of dysmenorrhœa. This helps to make the matter very simple, for if there is no pain there is no dysmenorrhœa: if there is pain in menstruation there is dysmenorrhœa. But if we look more narrowly into it, we find that pain is itself a very unsatisfactory criterion of a disease. We do not know what value to attach to the words used to express the feeling of pain. Nothing is more wanted by the practitioner than some good means of ascertaining the kind and degree of pain. In many, perhaps in the majority of cases of dysmenorrhœa, this want is acutely felt; but in many the pain is so severe that there can be no doubt of its high degree. In such cases it sometimes amounts to agony, and the constitutional effects of it are such as to render its greatness of degree apparent without the patient attempting to express the degree by too fallacious words.

The disease is subdivided into various kinds:—1. Neuralgic, or rheumatic, or gouty; 2. Congestive, or inflammatory, or membranous; 3. Spasmodic, or obstructive, or mechanical. This subdivision implies merely certain notions as to the nature or cause of the pain which constitutes dysmenorrhœa. It is a commonly adopted subdivision, and we shall make use of it. Farther subdivision—as into (1) Ovarian, (2) Uterine, (3) Nervous—merely increases the confusion, already great enough; for the inquirer will soon find that the common subdivision is the child and parent of as much ignorance and error as of knowledge and wisdom. In truth, it is at first sight manifest that the common subdivision is not really such, but an enumeration of at least three separate and distinct diseases, which have no claim to be classed together at all. So great is the confusion and ignorance of gynæcologists, that it would be paralleled by the surgeon who should class neuralgia, rheumatism, gout, simple inflammation, and painful mechanical disorders of the knee as one disease. The truth is, that dysmenorrhœa is merely a symptom, and the subdivisions of it indicate the names of what are imagined, and often too confidently believed, to be the primary diseases causing it.

1. *Neuralgic Dysmenorrhœa.*—When painful menstruation is not inflammatory nor spasmodic, it is generally called neuralgic. In like manner, when it is not inflammatory nor spasmodic, it is believed, sometimes on the flimsiest grounds, to be gouty or rheumatic. The further description of these varieties of dysmenorrhœa is, for the most part, mere garrulity. The pain occurs before, during, or after the menstrual flow. It varies in character and degree. It may be in the situation of the uterus or ovaries, in the base of the sacrum, or at the sides of the sacrum, or, indeed, anywhere.

The disease partakes of the character of other neuralgic disorders, and is treated accordingly. There is no speciality in the treatment that is worthy of mention.

2. *Inflammatory Dysmenorrhœa.*—When constitutional and local inflammatory symptoms accompany menstruation, then the pain is called inflammatory. The symptoms have no peculiarity, except their locality, in most cases. They generally commence before the menstrual flow, and often disappear slowly only after it is over. Indications of the inflammatory process—that is, pain and tenderness—are generally to be found in the uterus and ovaries, sometimes chiefly in one organ, sometimes chiefly in the others. The congestion or inflammation ends in resolution. If it ended in adhesions (perimetritis), or in parametritis, or in abscess whether perimetric or parametric, the disease would be placed in the category of inflammations, and removed from that of dysmenorrhœa.

On the second or third day of an uterine inflammatory dysmenorrhœa, a membrane is occasionally discharged along with the menstrual blood. When this occurs, the case is then called one of membranous dysmenorrhœa, and the disease is very apt to become chronic. This membrane gives a much desiderated definiteness to this class of cases. Not long ago it was regarded as like the membrane of croup, as a new inflammatory production. But, about a hundred years ago, it was known to be the same membrane as formed the decidua of pregnancy, namely, the inner layer of the internal or mucous membrane of the uterus. It is very rarely discharged, as the decidua of pregnancy is in cases of early abortion, or as we sometimes see it in cases of extrauterine gestation, that is, a complete mould of the cavity of the body of the uterus; and many cases of supposed membranous dysmenorrhœa are no doubt cases of early and repeated abortion, and this view is often confirmed by the large bulk of the mass that is discharged. In dysmenorrhœa the mbrane is mostly discharged in patches or shreds, not in an entire triangular mould of the true uterine cavity. There is frequently no special pain accompanying the discharge, but generally it is followed or accompanied by an increase of the bleeding.

These pieces of membrane are easily identified by the naked eye, or by a simple magnifying glass. The smooth surface is remarked to have numerous openings, being the ends of the test-tube glands on the interior of the uterus. The external surface is rough and irregular, as may best be observed under water.

The separation and discharge of these pieces of membrane are effected by uterine contractions; and the separation may be facilitated or effected partly by the increased density of the membrane, partly by exudation of blood or serum between the cellular or crypt layer and the deeper glandular layer.

While membranous dysmenorrhœa is generally believed to be a cause of sterility, it is certainly not necessarily so. Pregnancy, when it does occur, is liable to be interrupted; and even if it fortunately continues till the full term, there is in this circumstance no guarantee for future freedom from the disease.

There is no treatment of inflammatory dysmenorrhœa that can be said to be very successful. The difficulty does not lie in the management of any single attack. That is conducted just as the treatment of any other local inflammation is carried on. But the disease is reproduced by the recurrence of ovulation and its attendant vascular congestion. In other words, it is impossible to secure rest of the diseased organ. Yet, under appropriate management, many cases improve greatly, and many at length recover. It is not necessary to enter here on the various appliances in a case of local inflammation—leeching on the uterine cervix, on the groins, or on the perineum; laxatives, especially salines; hot poulticing; mercury in small doses continued for some weeks, and without producing tenderness of gums, or other distinct signs of hydrargyrismus.

Latterly, applications, generally of a caustic nature, to the interior of the uterus have been proposed, and are tried. Their use demands much consideration and care, and as yet little can be said for them.

The rich are frequently gainers by resorting to what are called deobstruent mineral waters, mostly situated in Germany, during a few weeks in the fine weather of summer.

3. *Spasmodic Dysmenorrhœa.*—This is the chief form of the disease. When present in a high degree it is intense suffering. The pain is often so great as to produce writhing, sometimes sickness and vomiting, sometimes prostration with cold sweating. The pain is described by the sufferer as spasmodic; generally remitting, sometimes nearly completely intermitting. It may occur at any time during menstruation, or even while menstruation is absent. Generally it is severest in the early days of the discharge, and frequently most so on the second day, or before the menstrual blood flows freely.

The disease, as it comes before the physician, is generally chronic.

It may have begun insidiously, and gradually increased. When it has once begun it returns with great regularity at the periods, but its intensity at different periods is liable to great variations. It is common among the unmarried, specially affects the sterile, commencing after marriage, and much less frequently the fertile.

I have not been able to arrive at any satisfactory results as to the etiology of the disease. Only it is sure that sterile marriage is frequently in some way or other a cause of it.

This disease has been long regarded as being produced by mechanical obstruction to the passage of the menstrual fluid out of the cavity of the womb, and latterly, the prevalence of this view has greatly increased, and the term stricture has been applied to the obstructing cause. The pain is then described as being produced by uterine efforts to expel the retained menstrual fluid; but real bearing-down expulsive efforts are an uncommon occurrence in this disease. There are great difficulties in the way of realizing a satisfactory theory of spasmodic dysmenorrhœa. Yet this common mechanical theory is untenable in the present state of our knowledge. The disease which naturally occurs to the mind as the analogue of so-called mechanical dysmenorrhœa is stricture of the urethra. In both, there is believed to be partial closure of the natural passage for the discharge of an accumulated and accumulating fluid. In both, mechanical means of cure are recommended, and with one merely mechanical object in view—enlargement of the passage.

The more true analogy for spasmodic dysmenorrhœa appears to be after-pains. In both diseases there is pain, uterine and of a spasmodic kind, while a bloody fluid is exuding from the interior of the uterus and getting free discharge through the cervical uterine canal. Both diseases are generally most urgent during the first and second days, and then diminish, while the discharge continues to flow still for some days longer.

The following difficulties in the way of acceptance of the mechanical or stricture theory may be stated.

The stricture or mechanical obstruction is not demonstrated. The disease is a common one; yet, on examining the uterus, its canal is, with rare exceptions, found to be as patent as in healthy women, or as in women who have no dysmenorrhœa.

The cutting instruments and tents used in dividing or dilating the supposed obstructing part or stricture are so large as to be available only when there is no stricture. Their use is itself proof that the mechanical theory is erroneous, or that mechanical obstruction does not exist.

When, in rare exceptional cases, a stricture is found—generally a congenital stricture of the external os—dysmenorrhœa is not always observed to coexist with it. In other words, extreme stricture may exist without dysmenorrhœa.

When, in rare exceptional cases, a real narrowing is found, as in congenital stricture of the external os, accompanied by dysmenorrhœa, then cure of the stricture is not found to be reliable as a cure of the dysmenorrhœa.

When there is imperforate hymen or complete atresia of some part of the neck of the womb, and consequent dilatation of the uterine cavity by retained menstrual fluid—that is, when there is absolute obstruction to the discharge, not merely a stricture—then the pains complained of are not so severe in kind or degree as in a characteristic case of spasmodic dysmenorrhœa.

Not only is there not described any stricture or mechanical obstruction, such being only imagined; but the dilatation and hypertrophy of the uterine cavity, which should be the natural result of such mechanical obstruction, are not described, and not found.

Characteristic dysmenorrhœa is observed at menstrual periods which are scanty in flow. Indeed, many authors describe scantiness of flow as the ordinary condition of the disease.

It is often observed that when the menstrual flow becomes copious the pain ceases, or that when it is copious from the beginning, the pain is slight or absent—circumstances quite inconsistent with the stricture theory.

Violent dysmenorrhœa is often present (if we may be pardoned the apparent contradiction in terms) when there is no flow, and consequently when there can be no obstruction, as in cases of imperfectly developed uterus, or cases where the uterus is replaced by a fleshy tubercle.

The disease sometimes disappears unexpectedly, and, after some healthy periods, returns again; a circumstance quite inconsistent with the existence of a permanent contraction or stricture.

The stricture theory fails at every point; for even were there a considerable stricture, yet not an absolute closing of the canal, it is impossible to regard it as an obstruction to free discharge. A very small opening—that is, much smaller than that of the natural or ordinary uterine size—is sufficient to allow easy passage to a much greater quantity of blood than seeks discharge. It is not true that any described size of passage (including the quality of length) in cases of stricture will impede the passing of any ordinary menstrual flow. This may be, and indeed has been, demonstrated by experiment. It is to the destruction or removal of the stricture that treatment is directed by the believers in the mechanical or obstruction theory. The very frequently unsatisfactory results of that treatment do not justify much confidence in the evidence supposed to be afforded by it in favour of the theory. Indeed, except in the case of the external os uteri, it has not been shown that the result of the mechanical treatment is permanent enlargement of the passage or removal of the stricture; and it is not natural to expect that such a result should follow. Incisions, at least, in the length of a mucous canal will not enlarge it, but rather have the opposite tendency.

Supporters of the mechanical theory must meet the case against them as here stated, for the most frequently occurring conditions have been supposed. In addition, they have to show what appears to me to be intensely improbable, that the force of the movement of the blood as it is discharged from the mucous membrane is so great as to distend the cavity of the body of the dense unimpregnated uterus actively and quickly.

But the theory may perhaps be applicable in special circumstances, which I shall now consider.

The canal may be closed by a plug of blood or dense mucus. This, indeed, would better account for the symptoms supposed to arise from obstruction than the imaginary stricture. But there are great difficulties in accepting this theory. For, although clots are sometimes seen in dysmenorrhœal discharge, they are by no means a necessary or even an ordinary occurrence. Again, clots would in any uterus act as injuriously as in one that is the subject of stricture, and they are not rarely observed in menstruation without there being any dysmenorrhœa. Further, if clot-plugs were the obstruction, they would stop the discharge entirely till they were displaced—a stoppage which is not described in this disease. Besides, several of the arguments against the so-called stricture tell against this supposed form of obstruction.

In like manner, many of the above detailed arguments may be made to tell against the supposition that the partial or complete closure of the cervical canal by spasm may be the obstructing cause.

It has been said that the obstruction is at the external os uteri. But this notion is entirely without foundation of any kind. Curiously, and also ridiculously enough, this allegation is made by gynæcologists who recommend incisions for the removal of the imaginary obstruction to be extended as high as the internal os uteri.

This latter part is with some reason fixed upon as the site of obstruction. It is the narrowest point of the whole uterine passage, and it is much less dilatable than the external os uteri. Besides, other indications might be adduced. But, as I have already said, no sufficient stricture has been shown in dysmenorrhœal cases to exist here; indeed, none at all. Not only does no morbid stricture exist in these cases, but the history reveals no cause of such disease coming on. Sterile marriage, for example, is a frequent alleged cause; yet it would be a bold and unjustified assertion that sterile marriage is a cause of stricture. Surgeons have not, as yet at least, found it to be a cause of urethral stricture in the male.

The analogues of dysmenorrhœa of the kind under discussion appear to me to be after-pains, strangury, tenesmus. These two last affections do, indeed, sometimes exhibit their affinity with it by accompanying it.

Patients frequently distinguish between neuralgic and inflammatory dysmenorrhœal pains, and those of a spasmodic kind. Not rarely those of one kind disappear while those of another kind remain.

When the uterus of a sufferer from dysmenorrhœa is examined during the absence of the flow, there may be nothing amiss discovered. It is a great rarity to discover anything of the nature of a stricture, for this is a rare malformation; and I can only here express my surprise at the language used by physicians, in describing to patients the nature of their cases. Such expressions as "the womb closed," "the passage too narrow," and "stricture," are frequently and certainly inappropriately used. But frequently the following conditions are observed: An ordinary full-sized uterine probe passed into the uterus finds great and unusual sensitiveness or tenderness at the internal os of the cervix; and in the cavity of the body of the uterus; sometimes the sensitiveness is extreme, and the pain excited very violent. If the probe be allowed to remain, and the patient is asked what is the nature or character of the pain, she very frequently spontaneously describes it as the pain she has during her monthly period. A large probe, a No. 10 or 11 of the ordinary male bougie series, can frequently in the intensest cases of spasmodic dysmenorrhœa be easily introduced, if a little pressure is kept up for a minute or so, on the obstructing internal os uteri. Frequently, indeed, a much larger bougie can be passed than a 10 or 11. Sometimes, in so examining a case of this kind, temporary and partial spasmodic obstruction at the internal os can be made out. There is no difficulty or obstruction usually at the external os uteri. When a large bougie is passed through the cervical passage to the fundus, and allowed to remain, the spasmodic pain excited, at first very severe, gradually diminishes, and is almost, if not entirely, gone in less than a quarter of an hour. The dilatation of the internal os is then so far effected, and probably the irritated fibres have relaxed their spasms. The pain is again momentarily re-excited in withdrawing the bougie. The pain thus produced, is the pain of the spasmodic dysmenorrhœa, but generally severer, as might be expected. It appears probable, that the pain of dysmenorrhœa is produced by the flow of blood from a uterus whose irritability is increased by the performance of the function of ovulation, and by its concomitant phenomena.

When a tangle-tent is introduced through the internal os uteri, and allowed to remain, the history of the pain produced is generally as when a metallic bougie is introduced, only it lasts longer. When a metallic bougie is introduced, the dilatation is completed at once, for the time at least; but when a tangle-tent is introduced, this is not true, because, after the dilatation caused by its introduction, further dilatation is caused by the expansion of the tissue of the tent. Yet even with a tangle-tent, the spasmodic pain generally is at an end in some hours. Not always so, however, and this generally in characteristic or bad spasmodic cases. In them, twenty-four hours may elapse, and the patient be still writhing under the incomplete or still-proceeding dilatation. When, in these circumstances, an attempt is made to withdraw the tent, it is found difficult to effect the purpose; for while the parts of it above and below the internal os uteri are expanded, the part encircled by the internal os has not had as yet sufficient force or sufficient time to effect the dilatation of that part. The tent is thus firmly seized by the stricture. This stricture is found to be under half an inch from the point or inner end of the tent, and it is more abrupt at the lower than at the upper or inner side. If the tent is allowed to remain longer, it at last effects dilatation to its own full expanded size. It wears out the spasm, probably.

By using successively larger and larger bougies, and allowing due time for the relaxation of spasm produced by each successive increase in size of bougie, it is easy to dilate the whole uterine passage largely, that is, till an 18 or even a larger bougie is passed.

In studying the theory of spasmodic dysmenorrhœa, it is worth while to remember the small size of the uterine extremities of the Fallopian tubes, and the possibility of spasm in these tubes, and of difficulty in the progress of the ovulum or other discharges from the tube into the uterus.

The diagnosis of dysmenorrhœa is easily made. It is painful menstruation, and it has only to be ascertained that the patient is probably or really menstruating. To diagnose simple dysmenorrhœa, it is necessary to ascertain the absence of any complicating uterine disease which may induce the pain directly or indirectly, as a uterine fibroid.

To diagnose the kind of dysmenorrhœa is generally easy, so far as such diagnosis goes. The different kinds may be conjoined; a dysmenorrhœa may be at once neuralgic, inflammatory, or congestive and spasmodic. To describe the diagnosis would be merely to repeat what has already been said under the head of symptoms.

The treatment of spasmodic dysmenorrhœa is highly unsatisfactory.

In slight cases, relief is gained by the popular remedies directed to increase the discharge. These are the hot pediluvium, and the swallowing of alcoholic stimulants, or of sal volatile. In somewhat severer cases, benefit is got by the use of antispasmodics, and the weaker sedatives. Among such remedies, the chief are ether, hyoscyamus, Indian hemp. Diaphoretics are also useful.

In the severer cases, all such remedies are of no avail. Relief can be secured by anæsthetic inhalations, or by the use of opium in some form. Many authors recommend the use of special preparations of these kinds of medicines, and often special methods of using opium, as by the mouth, by enema, by hypodermic injection; but after many trials of all methods, I have failed to discover any decided advantage in one method or another.

It is obvious that this kind of treatment is not in any sense curing. It is a poor compromise which really consists in the drowning of a pain, or a painful disease, by another artificially-produced disease, which is probably more injurious to the constitution generally. xication for a day or thereabouts by chloroform or by opium every month, is a morbid condition which has many disadvantages and dangers of its own. Yet there are cases in which the pain of dysmenorrhœa is so severe, that the practitioner is glad to resort to these drugs.

Dysmenorrhœa is often associated with sterility. Both are conditions which induce women to insist upon treatment, and to make them regardless of risk. But it requires to be kept in mind by the practitioner, that he is not justified in using a remedy whose proper risk is out of due proportion to that of the disease which he is treating. A so-called radical cure has long been in use for this disease. It is dilatation of the cervix uteri, and its introduction was a matter of course, when the mechanical or stricture theory of the disease was conceived. But the value and application of the treatment by dilatation have no essential dependence whatever on the truth of the theory which led to its adoption.

It is proposed to effect dilatation of the cervical passage in various ways; by scissors, by metrotome, by sponge or laminaria tents, or by metallic pessaries allowed to remain for some length of time, by bougies allowed to remain only a short time, and by dilators whose use takes only a short time.

The scissors is used to open up the external os of the cervix by those who believe this part to be the seat of obstruction. An ordinary scissors will answer the purpose, but special scissors have been constructed for the operation. It is easy to snip through the vaginal portion of the cervix at each side, and thus make a free opening into the cervical cavity. The wounds heal without restoring the small size of the original os—a result which can be easily understood on considering the arrangement of the parts. The operation may be compared to what may be called making an artificial hare-lip. Were the external os the seat of obstruction, this would be the proper operation for curing dysmenorrhœa. But I believe it is quite useless, except in the rare cases of abnormally small external os; and in them it cannot be trusted to as a cure of dysmenorrhœa should that disease complicate the malformation. If the external os is the seat of the disease, it is, of course, at least foolish to interfere with deeper parts. The plan of dilating the external os by incisions commencing at the internal os is ridiculous, both in a theoretical and practical point of view.

The great and rational attempts at a so-called radical cure, are directed to produce dilatation of the internal os of the cervix. If any particular point can be called the seat of the disease, this is the part. Many means have been, as already said, proposed and used with this object in view; but it is very doubtful whether or not any of them effects the purpose otherwise than temporarily. Cutting instruments appear at present to be the favourite tools, and it appears to me highly improbable that the result can be ultimately other than induration of the canal or passage by the resulting cicatrices. Experience, however, is the best test of their value, and may prove it;

even although the theory of mechanical obstruction may at the same time be shown to be false.

The instruments for bloodless dilatation of the internal os of the cervix may be divided into two classes:—1. Those allowed to remain for at least a day. 2. Those not allowed to remain above a few minutes.

The former class includes sponge-tents, laminaria-tents, metallic pessaries. The dilatation by tents is effected in the course of one or two days. The same is true of the metallic pessaries, but it is usual to allow these to remain for a long time,—that is, months or years,—if they do not excite acute inflammation.

Various metrotomes have been invented to incise the internal os uteri, and the operation is easily performed. Hæmorrhage is not unlikely to occur, especially if the incisions, which are made laterally, are made too deep. This hæmorrhage is arrested by a perchloride of iron plug in the cervix. Various injurious and useless plans are recommended to prevent, as it is said, the wound from closing, or from closing improperly.

I have used all these means of dilatation, and have been most extensively a witness, directly and indirectly, of their employment by others. The sanguine proposers of these methods have produced no satisfactory data to support their practical recommendations, and I regret to say that I have none prepared to support my own opinions. The absence of data is to a great extent justified by the impossibility of making good evidence out of them. Indeed, in the absence of any kind of odynometry, we must be content with a distant approach to good evidence. Some physicians appear to cure their cases as well and quickly without dilatation as others do with it. Yet, in the hands of every gynæcologist, there are many inveterate cases of severe dysmenorrhœa, and it is upon these alone that any dilatation should be even proposed to be tried.

My knowledge of the results of the use of the means hitherto spoken of may be summed up in a few sentences. Not unfrequently they produce a complete cure for one period; and this is no gain, because the pain (not to speak of the danger) of the operation is a set-off against it. Rarely their beneficial effect is more lasting, the cure being partial or complete. Not very rarely they have caused death either by hæmorrhage or by inflammation. Very frequently they have caused cervical catarrh, endometritis, parametritis, perimetritis, ovaritis, with all their attendant ills. Frequently they have aggravated the dysmenorrhœa. In short, their use has been most unsatisfactory. So much has this been the case, that, in common with those friends on whose experience and judgment I have most reliance, I have been reluctantly forced in the meantime to discontinue the use of a most promising remedy for a most painful disease.

But the occasional apparent complete success of the plan has led me to try again the method of effecting the purpose with the least risk of doing injury, the second class of instruments for bloodless dilatation being used. This least injurious method is the oldest of all, and it has been nearly forgotten in the crowd of its modern rivals. Even of it I would not wish to be thought to speak definitively. It involves the infliction of no wound; the instrument used remains in the womb only for a few minutes at a time, and sufficient time is left between the repetitions of its use to allow the disappearance of the irritation it causes. This method certainly causes much pain; but if it do not cure, it appears to me to cause, in the very great majority of cases, no injurious inflammation.

The operation is performed between two monthly periods, and it consists in introducing as large a bougie as will easily pass (a 10 or 11 in the ordinary male urethral series). On each successive day a larger bougie is introduced, till after several introductions, say seven, a large bougie is passed (an 18 or 19 in the ordinary male urethral series). The bougie to be passed does not enter the cavity of the body of the uterus at once, but moderate pressure continued for about a minute secures its passage. The dysmenorrhœa-like pain produced is severe, and lasts for about fifteen or twenty minutes, and then the bougie is withdrawn.

All the varieties of treatment, medicinal and other, applied in other forms of the disease are also tried in this form, and success is said occasionally to follow their use.

ARTICLE II.—*A Case of Obstruction of the Bowels, attended by unusual Symptoms; with Remarks.* By JOSEPH BELL, F.R.C.S.; and J. HALLIDAY CROOM, M.B.

(*Read before the Medico-Chirurgical Society of Edinburgh, 6th March.*)

J. H., a bank messenger, sent for me on the morning of Sunday 4th February, at 4 A.M. He is a spare, emaciated man, about fifty years old, somewhat under medium height. Previous to his present illness, he has enjoyed perfect health for thirty years, never during that period having occasion to consult a doctor or lie in bed a single day from illness.

4th Feb., Sunday, 4 A.M.—He tells me that he was perfectly well yesterday, and went to bed in his usual health last night. I find him now presenting the following symptoms:—He is sitting in bed, his elbow on his knees, groaning; his face bathed in a profuse perspiration; his tongue furred; pulse 120, hard, regular, and sharp; breathing short and oppressed; complains of thirst and much pain in left lumbar and iliac regions. This pain increased on pressure. The percussion note over this area is somewhat tympanitic. The lungs, heart, and other organs are healthy. His bowels were relieved yesterday. The motion was scanty, thin, and watery. Ordered to have opiate fomentations over abdomen, and ℥j. of castor-oil, guarded by ♏xxx. of laudanum.

4th Feb., Sunday forenoon.—The castor-oil has had no effect. Pain in abdomen, localized as before, and increased in severity on pressure; thirst continues; pulse 115, hard, incompressible. Ordered Battley's sedative solution to be applied by spongiopiline over abdomen. To have an enema of castor and soap-sud. Ice to suck; milk and beef-tea.

Sunday, vespere.—Injections failed to have any effect. Pain continues, and tenderness extending across abdomen. There is distinct tympanitis in left iliac and lumbar regions. Complains of a feeling of tenesmus, but nothing has passed; no vomiting. Pulse 115; temp. in axilla, 99·5°. Passed a large quantity of urine, which, when examined, was found to be normal. Twenty minims of solution of bimeconate of morphia (9 grs. to ℥i.) was introduced by hypodermic syringe over seat of pain. To repeat enema in morning. Diet, milk and potass-water alone.

5th Feb., Monday, 9.30 A.M.—Patient has had snatches of refreshing sleep during night; enema had no effect; pain over abdomen diminished; no vomiting; expression anxious. His eyes have a staring look. His complexion seems of a duskier hue. Complains of violent borborygmi, and occasional hiccup; pulse 110, weaker; temp. in axilla, 98°. Ordered ♏ii. of croton, and afterwards a ¼-gr. morphia pill; poppy-head poultices over abdomen. To have small quantities of brandy and white of egg.

Monday, vespere.—Bowels unrelieved; pulse 120, weak, incompressible; no vomiting; temp. 98°; features more pinched; pain localized in abdomen, but less intense. There is tympanitis along track of colon. Ordered gr.viii. of calomel.

6th Feb., Tuesday, 11 A.M.—Professor Simpson saw patient in consultation to-day, and, after careful examination, advised a hand-basinful of soapy water to be introduced into gut by means of O'Beirn's tube. Patient *in statu quo;* pulse 115, decreasing perceptibly in strength; tympanitis in left iliac fossa increased; less pain on pressure.

Vespere.—No change in condition after enema; patient experienced relief, and passed some flatus; no vomiting; hiccup recurs to a slight degree at intervals; distension of abdomen more marked, however, in right and left iliac and lumbar regions. Ordered to have ¼ gr. of morphia every hour, until patient is opiatized. To continue brandy and white of egg.

7th Feb., Wednesday, 9.30 A.M.—Patient is fully under influence of opium; pupils contracted; is drowsy, and when spoken to answers distinctly, and then relapses into a dose; complains of no pain; no vomiting; pulse 120, stronger and fuller. There has been no action of bowels. To stop opium.

Vespere.—Passed a little flatus; pulse 130, weaker than in morning; pain and distension over abdomen increased; no vomiting.

8th Feb., Thursday.—This morning patient complains of a feeling of great tightness and constriction over abdomen; pulse 115, weak; no amelioration of symptoms; features much more pinched; patient gradually becoming weaker. As the patient had got no relief from the usual medical remedies, and was gradually getting weaker, believing that surgical interference alone gave the patient a chance of recovery, I asked Dr Bell to see patient with me to-day, which he kindly did.

There are one or two points of medical interest in this case, to which it might be worth while to draw the attention of the Society.

In regard of the causation of the disease, one fact is very remarkable, viz., the entire absence of any assignable cause.

After a most careful inquiry, I could discover no history of any predisposing or exciting cause. He was a man of unusually temperate and regular habits. He had not previously been subject to any inflammatory attack, either of chest or abdomen. He had been undergoing no unusual fatigue, or exposed to any sudden heats or chills; on the contrary, he had been pursuing the simple and light duties of an office messenger. He went home on Saturday afternoon, and retired to rest in the evening in his usual health. The first accession of the disease was between 1 and 2 A.M., when he was roused by an acute pain in his left side, which he believed to be colic, and which, when I saw him two hours later, I attributed to the same cause.

One point is, however, worthy of remark. There is no one symptom which is described as more uniformly accompanying continued obstruction of the bowels, than constant intractable vomiting, at first simple, consisting of the contents of the stomach and mucus, but which, in a few days, becomes stercoraceous. In this case, although the symptoms of intestinal occlusion were well pronounced from the first, still, at no period during the progress of case, which lasted nine days, was there any vomiting nor any tendency to it. Nausea even was not present to any extent. Patient partook freely of milk, beef and chicken tea, and on two occasions, unknown to me, ate solid food in the shape of chicken and ham, so that the absence of vomiting could not be accounted for on the plea that the stomach and bowels were empty. Moreover, the post-mortem showed the stomach and bowels moderately full. This may be accounted for to some extent by the fact that, during his whole illness, the patient secreted urine very freely, and thus to a great extent diminished the fluid contents of the bowels; and as the occlusion was comparatively low down in the small intestine, no fluid accumulation had time to take place.

With reference to the medical treatment of the case, I have but one remark to make, viz., that the castor-oil and calomel, which were administered respectively on the third and fourth days of the illness, did harm, from the fact that they were given too late, and on each occasion increased the action of the bowels, and thus, instead of allaying, intensified the inflammation. J. H. C.

I now take up the history of this case where Dr Croom stops. On Thursday evening, he kindly asked me to see J. H. I found him calm, patient, and exceedingly self-possessed, sitting up in a semi-erect posture in bed, and complaining of little except a bad pain in the belly.

The abdomen was swollen, very red from the poultices and turpentine; on the whole, resonant on percussion, especially above the level of the umbilicus. There was no hernia, nor history of any previous hernia. The bladder was empty. There was no marked tenderness anywhere, but the pain was localized chiefly in the right iliac fossa, rather above the position of the ileo-cæcal valve, and at this spot careful deep-seated pressure gave the sensation to the hand of several coils of intestine matted together and distended chiefly with air. That is, I felt a tumour which was immovable out of its place, as if moored to the back of the abdomen; it was lobulated and resonant. The patient was naturally a spare man, so it was possible, notwithstanding the general flatulent distension, to have a fair idea as to the position of the contents of the lower abdomen. There was no trace of fluid in the cavity so far as palpation could tell. There was a certain amount of pain, and dragging, twisting sensation in the left iliac fossa. There was *no nausea, retching, vomiting,* nor *even hiccup.* The patient was not at all narcotized, but his pupils were fairly contracted. The pulse was 108, of fair strength, and regular.

After conversation with Dr Croom, I ventured the diagnosis of a twist of the small intestine, probably quite close to the cæcum, that it was not like intussusception, but that the case was a very bad one, and that we must keep in view the operation of gastrotomy, if symptoms did not abate. In the meantime, to carry on the opiate treatment, to continue the small quantities of beaf-tea, ice, etc.

Dr Croom was gently to open the question of operation to patient and relatives.

Next day we met again. I brought my assistant, Mr Milne, and my instruments, for the operation. The case was in nearly every respect unchanged. No vomiting had occurred, though he still took his food as directed. No stool had passed, but an explosion of flatus had greatly cheered and relieved both body and mind. Any idea of an operation was refused by the friends; but no real progress had been made; on the contrary, the flatulent distension and local tenderness in the right iliac fossa had greatly increased, and he was feeling much more pain there. So, knowing how very harmful mere distension was in destroying any hopes of the twisted bowel righting itself, I got leave to tap the distended portion with a fine exploring needle. I had not an exhausting syringe sufficiently small to fit it, so inserted the needle without the syringe, and had the satisfaction of draining off, first a very considerable quantity of flatus, which escaped with a hissing sound, and then allowed about two ounces of serum, with distinctly fetid odour, to escape. The patient expressed himself much relieved, and the local distension was very visibly diminished.

We again met early on Saturday. Still no vomiting nor even retching; indeed, not a symptom of any obstruction except the obstinate constipation, notwithstanding we had stopped the opium. The small trocar-wound was scarcely visible, and the pain in the right iliac fossa was much less. No more flatus nor fæces had passed. Urine continued normal.

Patient and relatives were still very unwilling for any interference to be attempted; and, indeed, in the face of the complete absence of stomach symptoms, we could not urge it. But the patient was willing, indeed anxious, that we should again relieve him of some of his distending gas. So, as there was a very distinctly limited resonance in the left iliac region, I again tapped him, drawing off, first a quantity of fetid gas, and then about two ounces of colourless and odourless serum, which, on standing, coagulated into a jelly. This we regarded as indicative of the presence of peritonitis.

We again met in the evening, and found the patient easier, fancying himself much better. Not a trace of nausea or vomiting; he still was taking beef-tea with relish. His pulse was 90. The pain was trifling. His intellect was perfectly clear, so much so that he reasoned with us as to the possible variations in the normal temperature of the body, and as to the effects of foods of various kinds upon the temperature. Still not the slightest passage of flatus or fæces; and there was one symptom which we did not like, and which had introduced the subject of temperature—his feet and hands were distinctly colder than natural, or than they had been previously. We ordered warm bottles and small quantities of brandy.

Next morning I was informed that he had died during the night, without the supervention of any new symptom, and without the *occurrence of vomiting or even retching* from the beginning of the case to the end.

Sunday, 9.30 P.M.—Although the patient had not been dead above eighteen hours, decomposition had gone on rapidly, and the odour of the room was horribly putrescent. The abdomen was discoloured and tympanitic all over, immensely swollen. The marks of the trocar were quite healed and hardly visible, like the central stain of a flea-bite.

On opening the abdomen, the peritoneal cavity was full of serum, with curdy flakes of peritonitis in it, and mixed with a quantity of little-altered beef-tea. General peritonitis of both parietal and visceral peritoneum. In the right iliac fossa, there were several coils of small intestine matted together, and adhering by means of masses of recent soft flocculent lymph; the bulk of the coils showed a chocolate-brown, almost black colour. They had lost their lustre, polish, and tension, and a portion of a coil had burst, leaving a hole with ragged edges, nearly as large as a sixpence. For three inches from iliac valve, the intestine was absolutely contracted and empty, up to a distinct twist, rather more than a half turn, which evidently was the seat of obstruction. The colour was tolerably healthy, except that it was congested for a few inches from the cæcum, which was almost empty. The ileum contained some small fæcal masses, but no gall-stone nor any specially hard body. The other abdominal organs were normal. We were not permitted to examine head or thorax.

Several questions, of very great practical interest, seem to me to be connected with this case. I will endeavour not to be tedious about them. They involve both diagnosis and treatment.

Diagnosis.—1. I cannot find, in any of the writers I have consulted on this subject, a single hint at the possibility of a case of obstruction, such as this is, ever going on to a fatal termination, without the occurrence of some symptoms of nausea and vomiting.

Authorities differ as to the exact cause of the vomiting, which is always urgent, generally stercoraceous; some ascribing it to a reversed peristaltic action, others, as Brinton, to the occurrence of a central backward current in the distended bowel, the peripheral current of which is still sent on in the natural direction; but all authorities regard the vomiting as the cardinal symptom. I need not multiply quotations, as all are at one on this point.

2. How did we arrive at the diagnosis of twist or kink in the small intestine, immediately above the colon, which we made at our first visit, and stuck to all through? Chiefly by exclusion. The pain was not sharp enough for gall-stone, nor in the right place. It was too rapid in its progress for malignant stricture. The patient was not of an age at which we might expect adhesion of vermiform appendix, or diverticula of ileum or ruptured mesentery.[1] These, as Brinton's careful tables show, are almost always diseases of youth or early manhood; while the average age at which twists or rotations of mesentery on its own axis take place, is fifty-four.

Again, as to its exact seat. We knew that the large enemata and the long tube had passed well into the colon, so that it probably was right; *second*, that there being no vomiting, made the ileum more probable than the jejunum. And, *lastly*, the tumour, so firmly moored in the right iliac fossa, seemed probably ileum low down; had it been even a foot or two up, it would likely have changed its position at times.

The small intestine, however, is very rarely the seat of twist, compared with the large, 76 per cent. occurring in the large, only 24 per cent. in it. This difference is still more remarkable, when we think of the difference in length of the small and large intestines.

The peculiar coiling lobular movement of the affected portions are so well described by Brinton, that I will use his words, in preference to my own, to describe what we saw and felt. After bor-

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[1] Brinton on Intestinal Obstruction, p. 88.

borygmi, which often herald an obstruction, "soon succeed less noisy, but more violent, movements of the intestine, during which it rises visibly against the walls of the belly in coils, that might be fancifully compared to those of a writhing serpent. As the distension of the canal increases, these movements become more marked, and are often so distinctly seen, through the stretched and attenuated wall of the belly, as to allow the observation of a definite peristalsis in the intestine beneath it; and even when, at a later period of the disease, the paralyzed intestine has ceased to offer any of these active movements, the aid they furnish to diagnosis is often replaced by the exactness with which the distended bowel is mapped out on the abdominal parietes; the swellings, answering to the tube itself, being thrown into relief by hollows, which correspond to the intervals of adjacent loops of bowel" (Brinton, p. 25).

Pathology.—We have next the very difficult question to settle as to what is the initial mischief in this case and similar ones. (1.) Is it a peritonitis which first glues the bowels together, and thus predisposes to the occurrence of a semi-rotation of the further bowel on its own axis, and consequently a kink or twist? or is it (2.) The twist forming accidentally first, and then the peritonitis occurring as a secondary condition, the result of the stoppage?

The latter seems by far the most likely explanation, and is supported by the best opinions.

Sir Thomas Watson says the inflammation is an accident or consequence of the obstruction, or of the means used to overcome it (Prac. of Physic, ii. 463).

Brinton hints at a connexion between enteritis, and an irregular and defective peristalsis, as explaining these twists (op. cit., p. 87).

Pollock finds an explanation in a predisposing anatomical and an exciting physiological series of causes. Thus, "Rokitansky has very justly observed, that the predisposition towards incarceration, from twisting of the gut, is dependent on a congenital or acquired long, loose, flabby mesentery or mesocolon. But the mere existence of such a state, which allows very free movements of the bowel to take place, is hardly sufficient to account for sudden strangulation of the parts taking place. It appears to us, that something is requisite to establish the twist; and that this something is to be found in an accumulation of feculent matter, invariably present wherever such twists occur. This accumulation of fæces, fluid or solid, so loads and distends the bowel, that if accidentally it becomes shifted into a position unfavourable for the free passage of its contents, the intestine has no power to recover itself, nor has its peristaltic action any influence in altering its position, or that of the contained fæces."

The presence of a gall-stone or a tumour may in some cases explain satisfactorily enough a twist; no such reason was present here, nor was there any very distinct history of exaggerated constipation.

The ileum above the twist did contain a few scybala, as also the colon, but they were few and small.

Treatment.—The treatment of such cases may resolve itself into two heads, medical and surgical.

I. *Medical.*—Every case of this kind will, at the outset, be undistinguishable from a common case of colic combined with constipation, and as such, will be treated either by doctor or relatives. The question soon comes up, How long are we to persevere in the purgative treatment? I answer in Sir Thomas Watson's words, "Common sense and common humanity answer, you must stop it the instant you are convinced there is a mechanical obstacle which cannot be overcome" (op. cit., p. 464). After this, what?

1. Opium pushed boldly, to soothe and quiet. Belladonna is highly recommended by Brinton, in cases where opium does not act. 2. A diet containing as little waste matter as possible, beef-tea, ice, etc., in small quantities. 3. Nutritive enemata.

II. *Surgical.*—Enemata repeated again and again, as large and as warm as possible, always expecting that, by patience, hardened fæces may be broken down; but, *N.B.*—Do not use enemata if the first is not returned, as in some cases the enema passes the twist, and remains behind it, only doing much harm by adding to the distension.

2. Tapping the intestines above the seat of stricture, to relieve distension by fæces or fluid. All writers on this subject are agreed, that nothing is so likely to induce or maintain an internal twist or strangulation as undue distension of the intestine. It rapidly produces paralysis of the muscular coats, diminishes or entirely stops all peristalsis, and is a most fertile cause of absolute stagnation.

In Brinton's words, "Whatever diminishes or protracts this inevitable process of distension, and thus restricts it to those moderate limits, within which alone its results are salutary; whatever prevents the access of paralysis in the muscular wall of the bowel, or helps that wall, already more or less exhausted, to recover some of its pristine vigour; whatever does this, will not only stave off death in fatal cases, but will assuredly, in any large number of obstructions, often mediate a complete recovery. . . . And this distension, which sensibly destroys the tissues of the distended bowel, by a violence of the inflammatory process, traceable through all grades, from extreme congestion to downright gangrene; which not only prevents, but mechanically disturbs that sequence (in time and place) of adhesive organization, and ulceration or sloughing, necessary to remove and oppose the disease and healthy sequents respectively; and which further arrests the peristalsis requisite to get rid of the putrid sloughy exuvium, set free in the cavity of the intestine,—distension is, from all these reasons, still the *bête noir* of the story" (Brinton, op. cit., pp. 105, 106).

Gay remarks, "Usually the tightness of the twist is in proportion to the distension of the bowel." I could quote many more authorities on this subject.

Can we relieve this distension easily, painlessly, and safely? I believe we can, in the simplest manner, by tapping the bowel with a fine exploring needle.

I need hardly remind the Society of an operation on a similar principle, often performed on animals, but I hope to show, that even to man, this is neither difficult nor dangerous.

Professor Gross, of Philadelphia, has long been of opinion that great, if not permanent relief, might be afforded in cases of gaseous distension by puncture, as its escape might not only enable the tube to regain its contractility, but also take off pressure from diaphragm and abdominal muscles. He has done it himself in one case, in which great relief to distension and suffering, in scirrhus of the colon, resulted, and the patient survived the puncture for three weeks.

I have collected a considerable number of similar cases in the French practice of the last few months, and already put them on record in the pages of the *Edinburgh Medical Journal*, in the Nos. for December 1871, January and March 1872; and a most interesting paper by Mr Wathen, of Fishguard, in the *British Medical Journal* for 21st October 1871, has brought to light a large number of similar experiences in English surgery, which I briefly summarize:—

(1.) Mr Wathen's own: tympanitis, six punctures, death, no post-mortem.

(2.) Mr Teale: death, no trace of puncture.

(3.) Mr Salmon: no bad effect on post-mortem.

(4.) Mr Thomas: great relief.

(5.) Sir H. Marsh: great relief, recovery.

(6.) Lawson Tait: numerous punctures for days together.

(7.) Dr Symes Saunders quotes a large number of authorities in support of the practice, ancient and modern, and among them Dr Ollivier, who operated on twenty cases in Bolivia, with eight recoveries and twelve deaths.

3. Could this have been remedied by operation? and if so, by what operation?

I think it could. Had we obtained leave to operate sufficiently early, the loop of intestine might have been unravelled, and the twist reduced. Still, in the very remarkable circumstance of there being no vomiting, I do not think we had sufficient warrant to force or insist on an operation.

What operation should be performed? *Not colotomy;* for this, though most useful in some cases of stricture of the sigmoid or rectum, would not have been of the slightest use in this case, as the colon was empty, and the stricture above it; and also, experience has shown, that even when the obstruction is in the colon, colotomy does not suffice. The distended small intestine has been cut on, and an artificial anus made after Nelaton's method. This operation may possibly give temporary relief, but it is impossible to tell which portion of the intestine may be brought to the surface and stitched to the wound. So the artificial anus, in all cases a disgusting and dangerous deformity, may quite likely prove useless, from its being so high up that the patient may perish from inanition.

Gastrotomy, or laying open the abdomen in the middle line, seems in cases like the present the only, though a very doubtful and dangerous, remedy. I need not here insist on the details of such an operation, but the successes of ovariotomists have familiarized us with incisions into the peritoneum, and give hopes of a good result in the future.

In all such cases the diagnosis is difficult, and the operation so dangerous, and the possibility of a cure by nature's efforts so apt to encourage a too-long delay, that probably cases cured by operation will be few and far between. To enable us to form a correct opinion, cases should be carefully watched, and, if possible, always examined and recorded. Hence an excuse for a long, and I fear, so far as my part is concerned, a tedious paper. J. B.

ARTICLE III.—*The Nature of Rötheln or German Measles:* Being part of an Inaugural Thesis commended by the Medical Faculty, Edinburgh University, 1871. By ROBERT W. FOSS, M.D.

THE following is a typical case:—R., brassfounder, æt. 27 years, a dark-complexioned and very muscular man, temperate in his habits, says he never had a day's illness in his life. About a month since, several children living in the house where he lodges had scarlet fever.

On 15th December 1870, he felt much malaise, insomuch that he was unable to go to his work. He also complained of his throat being slightly sore.

19th December.—Says that he felt "worse" yesterday; that he had frequent rigors; his skin was hot and burning. There was great thirst, and a constant feeling of heaviness in his head. No rash; sore throat still the same; slept badly at night. He was first seen by me to-day, and was then prostrate in bed. His skin was hot, and perspiring much. The temperature (according to one of the ordinary self-registering thermometers, placed in the axilla and allowed to remain seven minutes) was 102·2°. There was a scarlet, punctated, non-papulated, non-crescentic-shaped rash, diffused over the whole of the anterior surface of the chest and upper half of the abdomen, the loins, and at the flexures of the elbow and knee joints, the remaining portions of the cutaneous surface being clear. He says that he first saw this rash to-day, although he had closely examined his skin every day since the beginning of his illness. He complains of his throat being very sore. None of the glands about the angles of the lower jaw are enlarged perceptibly to the touch externally. The whole of the back of the pharynx, soft palate and its pillars with the tonsils, are red and congested. The tongue is dry, and presents a white, furred base and centre, the margins being red; the papillæ are slightly more distinct than normal. There is complete anorexia. The bowels are regular; says he did not sleep last night at all. He complains of violent, "heavy," frontal headache. The pulse is 120, full, and hard. The face is congested, and has a dull expression. He has a constant discharge of watery fluid from his eyes (epiphora). There is also photophobia. The conjunctival vessels, especially of the eyelids, are enlarged. There is also a slight watery discharge from his nostrils (coryza), but he says it is of no consequence compared with the other. He has occasional cough, with frothy mucous expectoration. A few rhonchi are to be heard on applying the stethoscope over the larger bronchial tubes; but otherwise the lungs are normal. The following mixture was prescribed:—℞ Acid. hydrochlor. dil., ʒi.; tinct. cardamom. comp., ʒi.; aq. ad ℥vj. M. Fiat mistura. A tablespoonful to be taken every four hours. Also a draught, containing twenty grains of chloral hydrat, at bedtime, if necessary. He was to have two pints of milk and one pint of beef-tea during the day. No stimulants.

20*th December*.—Did not sleep much last night. The draught was not given. Skin still perspiring much. Temperature 100·2°. The rash seems darker in colour; the punctations have disappeared; the limits are the same. The pulse is 84, firm. There is still much discharge from the eyes. The other symptoms are as before.

21*st December*.—He slept better last night. There is no headache now. The rash still presents the same appearance as yesterday. Temperature 99·2°. He says his lips and tongue are sore, which is probably owing to some slight fissures. The tongue has still a furred base, with a red margin. The appetite is better to-day. The bowels have been confined for the last two days. The lachrymation is less, but he expectorates more than previously. Pulse 76, firm. He complains of much pain in his elbow, knee, and ankle joints whenever he moves them. There is no swelling in any of the joints.

22*d December*.—The rash is still out, very dusky; there are slight clear spaces here and there on the chest as if it were fading. He slept well last night. The temperature and pulse are now normal; the skin is cool, with a little perspiration. The lachrymation is nearly gone. There is no coryza now. He still expectorates much frothy mucus. There is no pain in the chest. The physical signs are as before. He says that he feels stronger to-day. The tongue is red, moist; the white fur has disappeared. The appetite is good, and the bowels regular. There has been no sore throat for the last two days. He still has the pain in his joints, but it is less severe.

23*d December*.—He was sitting up in his bedroom to-day. The epidermis of his chest was peeling off in large flakes. He expresses himself as feeling well now, except that he is rather weak. From this time he went on well, and made a good recovery.

The chief points which require notice in this case are: 1*st.* The duration of the period of invasion, or that period during which the febrile symptoms existed without there being any rash on the skin. This period lasted four days; and what was also remarkable was, that on the fourth day the patient felt worse in every respect.

2*d.* The appearance of the rash on the fifth day, and its limitation to certain portions of the cutaneous surface. There was nothing different except this from the rash of scarlet fever.

3*d.* The coexistence with these of catarrhal symptoms, beginning on the first day with sore throat, followed by constant and copious lachrymation, with coryza, together with cough and expectoration—the last increasing towards the period of lysis of the febrile symptoms.

4*th.* That, on the sixth day of illness, and second of the rash, a decided lysis of the febrile symptoms took place, as indicated by a fall both in the temperature of the skin and rapidity of the pulse. This lysis was complete on the following day, the seventh of the illness.

5*th.* The rash remained out five days, and did not alter in appearance, except a shade in the colour.

6*th.* On the ninth day, desquamation in large flakes took place, and convalescence was established.

Rötheln, or German measles, like measles and scarlet fever, was for a long time confounded with smallpox. First, the two latter were distinguished from variola, and then measles from scarlet fever, the final distinction being made by Dr William Withering in 1779. Shortly after this, several German physicians separated rötheln from scarlet fever; and prominent among them was Hildenbrand, who gave the disease under notice the name "rubeola"—a name which had been adopted by English physicians for measles. Hildenbrand retained the term "morbilli" for measles. This nomenclature has been used by most Continental writers, and in England by Dr Copland; but in this country the term "rubeola" is generally used to designate measles, the disease under consideration usually being called rötheln. Hebra says, speaking of roseola or rubeola, which he considers the same thing, "Unbiassed observation, however, shows that such cases of roseola are either forms of measles, of slight intensity, in which the catarrhal affection is nearly or altogether wanting, or instances of mild and imperfectly developed scarlatina; or, on the other hand, they might just as well be included under the head of Urticaria. It is, in fact, quite unnecessary to describe by the name of roseola, rubeola, or rötheln a special exanthematic eruption." I will just give Copland's definition of roseola. Willan was the first to describe it: "An eruption of small rose-coloured patches, of irregular forms, very slightly elevated, transient, and passing into a deeper roseate hue as they slowly disappear—the patches being either limited to a part, or to the limbs, or dispersed over the body, preceded and attended by slight fever, and non-infectious." It is worthy of remark, that the rash in roseola is preceded by an invasion febrile period of four days. The question as to similarity is, I think, settled by Bateman, who says, in describing scarlatina simplex: "This species may be easily confounded with roseola; but the progress of the rash is from the face to the trunk and extremities, whilst the reverse of this occurs in roseola."

The period of incubation of rötheln is hypothetically stated by Dr G. W. Balfour to be fourteen days.[1] The disease is defined by Copland thus: "Fever attended by coryza, redness and watering of the eyes, redness and soreness of the throat, pains in the back, head, and limbs, attended on the third or fourth day by the sudden and general eruption of a red efflorescence, which terminates about the tenth day by desquamation: the disease presenting the characters of measles and scarlet fever conjoined."

The period of invasion is variously stated by different authors to be from two to seven days; the mean of which would be four days. This period is attended with the usual symptoms of an ordinary catarrh, such as shivering, pains in the back, head, and limbs, lassitude, and also "heavy" frontal headache, added to a mixture of the primary symptoms of both measles and scarlet fever, as lachrymation, coryza, and slight bronchitis, together with sore throat. There is also want of sleep and prostration. On the fifth day the rash appears; at first it is limited to certain parts, as the chest and arms, afterwards it may become universal. It is said to differ from the eruption of scarlet fever, in that the early punctations are larger and darker in colour. The rash begins to fade after it has been out two days; then the bronchial signs are said to be exaggerated. The rash remains out from five to ten days, when desquamation takes place, the lysis of the fever usually happening when the rash begins to fade. Desquamation takes place in large flakes. There is often a good deal of nervous excitement, such as delirium, at the height of the fever, and the chest symptoms may become serious. The lysis is often accompanied by much perspiration, epistaxis, and loaded urine.

The disease is liable to the same sequelæ as scarlet fever and measles, and prominently among them is acute desquamative nephritis, accompanied with anasarca, which is said frequently to follow an attack of rötheln. The fact of a person having undergone this disease affords no protection from a subsequent attack of either scarlet fever or measles. This has been proved in all the epidemics that have been observed, and is a most powerful argument in favour of rötheln being a separate and distinct fever. Rötheln can propagate itself. This also has been observed in all epidemics, and it has been shown that it does not spread measles or scarlet fever, as those who describe it as a hybrid of these two diseases assert. This was demonstrated in an outbreak in a school at Cramond, which came under the observation of Dr G. W. Balfour. The disease occurs very frequently in the sporadic form. In order to establish what I have to propose on the nature of rötheln, it will be necessary for me to premise the following "on the period of incubation in scarlet fever."

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[1] There was no hypothesis in the matter; it was purely a question of observation; the number of cases under my care during the epidemic being thirty in all. Vide *Edin. Med. Journal*, 1857, p. 718.—G. W. B.

This period is variously defined in books; most of them, however, say "that it is from three to five days to a fortnight or three weeks"—some also adding that the usual period is between the two first figures. I shall attempt to show by cases that it is possible to fix the exact time between the infection of the person by the fever virus and the beginning of the fever. There are many ways by which a person might become infected, the last of which, as a vehicle for the virus, has been discovered in milk.

The method which has been adopted for me—because it is only to be found in the houses of the poorest, where the healthy children are allowed to live and play in the same room with the sick ones—is to observe the exact time between when the rash came out on the first patient and the time when the second began to be ill, and I have, in six cases, involving twelve persons, found it to be exactly three days. I also take as a postulate, that the fever itself is not communicable before the appearance of the rash.

Hildenbrand, who is the first author who gave a full description of rötheln, and has been copied by every subsequent writer, says that some consider it, with Hufeland, Schäffer, Formay, and Heim, as a variety of scarlet fever; and that Kapp, Wickmann, and Reil view it rather as allied to measles; whilst Ueberlacher, Jahn, and Fleisch believe that no essential difference exists between measles, rötheln, and scarlet fever. Copland, a later writer on the subject, considers it a hybrid of these two fevers, presenting sometimes a predominance of the symptoms characteristic of the one, at other times of those distinguishing the other, and not unfrequently an equal combination of both.

I am inclined to think, with Hufeland, Schäffer, Formay, and Heim, that it is a variety of scarlet fever, and should define it as "scarlet fever combined with catarrh,"—the catarrh being coexistent and coetaneous with the entrance of the scarlet fever virus into the body of the patient, the symptoms of the catarrh at once showing themselves, and aggravating what is usually the period of incubation in scarlet fever. My reasons are—

1st. The rash of rötheln is the same as that of scarlet fever.

2d. The desquamation in rötheln after the disappearance of the febrile symptoms is by large flakes of skin as in scarlet fever, and not by small branny scales as in measles.

These are my reasons for believing it to be a variety of scarlet fever.

3d. In rötheln, the period of invasion, taking the mean of all ervers, is four days.

4th. The period of incubation in scarlet fever, as I have endeavoured to prove, is three days, the period of invasion being one day; making, in all, four days.

5th. As in the case detailed, the febrile symptoms in rötheln undergo a marked exacerbation on the day preceding the eruption of the rash, announcing as I consider the beginning of the period of invasion of the scarlet fever.

These latter are my reasons for considering the catarrhal symptoms coetaneous and coexistent with the entrance of the scarlet fever virus into the blood of the patient. These propositions may be tabulated as follows:—

	Scarlet Fever.	Rötheln.
Period of incubation, . .	3 days	4 days.
Period of invasion, . .	1 day	

ARTICLE IV.—*On Antiseptic Surgery.* By JAMES CUMMING, M.D., M.R.C.P.E., L.R.C.S.E.; late Resident Surgeon, Clinical Wards, Royal Infirmary, Edinburgh: Being part of a Graduation Thesis for which a Gold Medal was awarded by the University of Edinburgh, 1st August 1871.

THE term antiseptic (αντι, against; σηπτος, putrid) literally means, an agent which has the power of arresting or preventing putrefaction.

Among some of the most efficacious rank carbolic acid, chloride of zinc, and quinine.

Carbolic acid has become intimately associated with what is termed the antiseptic treatment, simply because it was employed as the reagent or medium in the dressings, etc., from its known poisonous properties on the lower forms of infusorial life. The use of carbolic acid as an external dressing, and the "antiseptic treatment," have been by some erroneously supposed to be synonymous terms. That is to say, "that if you simply dress a wound with carbolic lotions or plasters, you are doing all that is necessary in adhering to the principles laid down by that treatment." Now, I need scarcely state, *that the application of carbolic acid as a dressing without any precautions, and the application of carbolic acid on the antiseptic principle, are treatments essentially different.*

It is possible that some day a reagent may be discovered possessing the germicide properties of carbolic acid, and, in addition, qualities which may render it preferable (less of an irritant, although now, the percentage of carbolic acid in the dressings has been so much lessened, that that objection has, in a great measure, been obviated).

Let me give a very brief history of carbolic acid as used generally.

Carbolic acid, the hydrated oxide of phenyl or phenic acid, is a white substance, which crystallizes in long prisms, fusible at 93° Fahr., and boiling at 370°. It has a slight tarry and aromatic smell, resembling that of wood creasote, is freely soluble in alcohol, ether, and glycerine, partially so in glacial acetic acid, and only slightly so in water. It is prepared by treating the oils of tar, which distil between 350° and 400°, with caustic lye; removing the caustic lye solution from the neutral oils, and adding hydrochloric acid to the alkaline solution, when the carbolic acid is set free and rises to the surface as an oily fluid, from which, by distillation, the above therapeutic agent is obtained.

Equivalent — $HO,C_{12}H_5O$, or HC_6H_5O. Specific gravity — 1·065. Appearance—colourless, acicular crystals. There are two qualities, (1) coarse, (2) fine.

It has been known more or less to the chemist for upwards of forty years.

Lebœuf, in 1850, wrote on coal-tar as a surgical application.

Lemaire, of Paris, published a work on phenic acid, mentioning its beneficial effects when used as an external surgical dressing, but laid down no rules for its use. He took no precautions to exclude the atmospheric air *during the whole period of the healing process.*

Grace-Calvert, in 1863, recommended carbolic acid as an application in polypi, ozæna, sore throat, ulcers, hæmorrhoids, lupus, sloughing wounds, and phthisis.

Velpeau, more than ten years ago, used carbolic acid as a disinfectant in surgical operations, but condemned it on account of its causing irritation, and being inferior to other disinfectants.

Wolf, several years ago, recommended carbolic acid in the treatment of phthisis.

Keith administered carbolic acid in small doses in scarlatina, measles, and smallpox, and mentioned the following physiological effects as resulting from its use:—*i.e.*, profuse perspiration, rapid fall of the pulse (as in twenty-four hours from 160° to 60°). Skin cool and moist, subsidence of fever, tongue cleaned, improved appetite. In scarlatina the throat affection is lessened.

Porter, of Dublin, injected a nævus situated on the forehead, immediately above the nose (venous in character, and of the size of half-a-crown), with carbolic acid, repeating the operation seven times, when the mass became consolidated, and in due time was absorbed.

Eade, on the principle of carbuncles and boils being of parasitic origin, after making a free crucial incision, dressed the wound with carbolic oil, 1—5, and met with good results.

Lund, of Manchester, used carbolic acid in its undiluted form in the treatment of lupus.

Sedgwick used it as a gargle in diphtheria and ulcerated tonsils: —℞ Acid. carb., ♏20; acid. acet., ʒj.; mellis, ʒij.; tinct. myrrhæ, ʒij.; aquæ, q. s. ad ℥vi. Solve.

The following compound is alluded to in the *Medical Times:*—

"Liq. carbonis detergens," an alcoholic solution of coal-tar, containing carbolic and other acids, and differing from carbolic acid, as the liq. cinchonæ does from quinine.

Erasmus Wilson used carbolic acid in a case of herpes preputialis, which acted as an anæsthetic, and eventually cured the disease. I have frequently observed the anæsthetic properties of carbolic acid in the treatment of compound fractures, and when applied to superficial granulating sores. It seems to benumb the part.

Yates, of Canada, employed a carbolic ointment to prevent the pitting of smallpox, spread upon black cotton wadding, changed every second day. It seemed to prevent the secondary fever.

Vigla read a paper relating to the use of coal-tar as a disinfectant nearly twelve years ago.

Small doses of carbolic acid have been found extremely useful in the treatment of obstinate vomiting, nausea, morning sickness of pregnancy, etc.

In the form of a vapour, it has been inhaled in gangrene of the lung, ulcerated sore throat, foul breath, phthisis, etc.

Messrs Salt, of Birmingham, have constructed an apparatus for fumigating wards and private chambers.

Russell, of Glasgow, used the vapour in the fever wards of the Glasgow Infirmary.

In short, carbolic acid, more especially of late years, has been tried in most diseases, medical and surgical. It is not surprising that an agent so universally employed should have received much abuse, as well as commendation.

In the year 1864, an epidemic raged among the cattle in Cumberland, and was particularly virulent in the immediate neighbourhood of Carlisle. Among some of the more important disinfectants tried was carbolic acid, which seemed to exert a specific action on the entozoa feeding on the cattle, destroying them effectually.

Dr Lonsdale informs me that carbolic acid was used in large quantities to mix with the sewage of Carlisle, preparatory to that sewage being applied for irrigation upon the pasture lands in the neighbourhood. It was also applied to byres and other outhouses during the rinderpest.

Now, it is evident that carbolic acid proved efficacious in this epidemic, from its direct poisonous action on the entozoa, etc., when other disinfectants would probably have failed. Hence, the question came to be, since carbolic acid has proved so efficacious, will it not prove equally so in the case of those minute organisms constantly present in the atmosphere?

Before entering on the antiseptic treatment, let me offer a few explanatory remarks regarding

The terms Antiseptic and Disinfectant.—Antiseptics (αντι, against, and σηπτος, putrid) literally mean agents which have the power of arresting or preventing putrefaction. Among some of the best known rank carbolic acid, chloride of zinc, and quinine.

Dr Geiselen found that the preservative property exerted on fresh meat by pure quinine was greater than that by many other substances, including cinchona. He first tried it in a case of extensive carbuncular inflammation affecting the lower half of the calf of the leg, which rapidly put on a healthy appearance. Also in a case of noma in a child, where it proved equally efficacious. He then used it in bed-sores, caries, sloughing of malignant growths, etc.

May not the wonderful powers of quinine in malarious fevers, etc., be traced to its action on the lower organisms and minute fungi, which seem to be so closely connected with their origin?

Chloride of Zinc.—As a local application where putrefaction has already taken place, or where the antiseptic treatment is inapplicable, as in maxillary tumours, it is invaluable. Mr C. de Morgan has advocated its use very strongly, but its caustic properties are too severe to be used in general surgical practice (in skin-flap amputations there is a risk of sloughing). There are some situations in the body where it is difficult to fix the dressings, and if perchance the patient, during the night, rub them off, and thus expose the wound, the injection of chloride of zinc, 40 grains to the ounce, is very beneficial, and will completely arrest putrefaction.

Disinfectants.—The term disinfectant has many definitions. It is more, if I may so express it, a medical term, as it is generally used in connexion with fevers, *i.e.*, smallpox, typhus, typhoid fever, cholera, etc. (disinfectans, *dis*, and *inficio*, I infect). The following are some of its definitions:—(*a.*) Mechanical or other agents which destroy miasmata, both odorous and inodorous, or, in short, morbific effluvia. (*b.*) Agents which can remove any impurity from the atmosphere. (*c.*) Substances which can prevent infectious diseases from spreading, by destroying their specific poisons. (*d.*) Antiseptics, or agents that are capable of removing any incipient or fully formed septic condition of the living body, or of any part of it.

The last definition is evidently incorrect, as, in the first place, the terms antiseptic and disinfectant differ etymologically; and, secondly, because the former act by destroying agents which would, if unmolested, create putrefaction.

Then many disinfectants act simply as deodorizers, concealing by their strong odours the effluvia emanating from the part affected. Some are supposed to act by oxidizing, others again by deoxidizing. They have been employed in medicine from the earliest times.

In India, it is a traditional Hindoo custom, when a person is suffering from fever, particularly malarious fever, to keep near him various domestic animals, which are believed to act as absorbents of the noxious principles, or, at least, as preservatives and disinfectants for the attendants. These unfortunate animals are killed by relays, the number employed depending on the resources of the patient.

The observance of the need-fire is an ancient superstition of the north of England. It consists in creating a fire by the friction of two sticks, and collecting a quantity of fuel, by which a great fire is maintained for several days. Cattle affected with murrain, and various epidemics, were supposed to be cured by being held for a short period exposed to the smoke.

The following are some of the more popular disinfectants:—*Chlorine*, *chlorinated lime*, *chlorinated soda*, *permanganate of potash*, *carbolate of lime*, *preparations of sulphur*, *logwood*, *charcoal*, *sulphite of soda*, *iodine*, *bromine*, *hydrochloric acid*, *green vitriol*, *nitrous acid fumes*, *vapour of vinegar*, etc.

Desmartis believes extract of logwood superior to every other agent for disinfecting wounds. He applied it in the form of an ointment to a cancer, and found it immediately destroyed the odour, and also seemed slightly to affect the discharge.

Chlorine has been used largely to disinfect sewers, drains, etc.

Chlorinated soda, a few grains to the ounce, is a favourite disinfectant lotion with some.

The various preparations of sulphur received great prominence at one time. Sulphurous acid lotion was largely used as a dressing, applied in the form of spray, to ulcerated sore throats, and also inhaled. In the Clinical Surgical Wards, this lotion was used to a considerable extent, before the introduction of the antiseptic treatment. A small quantity of sulphite of soda was placed in a saucer, and some sulphuric acid poured over it. Thus, by chemical decomposition, sulphate of soda was formed, and the sulphurous acid gas liberated; and it certainly removed, to a slight extent, the offensive odour from the wards. But this treatment did not seem to exert any beneficial influence on the wounds, nor had it any effect in reducing the average of erysipelas, hospital gangrene, or pyæmia.

Polli, of Milan, on the principle that many blood diseases were the result of some morbific ferment, and that some remedy might be given which would neutralize this, recommended the sulphites of soda and magnesia. He found, as the result of some experiments, that if a dog be previously sulphited, it will survive an injection of pus, which, under ordinary circumstances, would have proved fatal.

The hyposulphites have been largely administered in surgical practice, in the hope of acting as preventive in cases of pyæmia, but without any satisfactory results.

Dr C. Paul, in an outbreak of cholera, used a solution of the hyposulphite of soda as a disinfectant for the extremely offensive emanations, and stated that it proved a great comfort to those in attendance. Also in the form of enemata, which not only destroyed the odour of the emanations, but gave considerable relief to the patient. He then used it sprinkled on napkins, as a preventive of puerperal fever, when it was found to act also as an anæsthetic.

Bonjean, of Chambéry, recommends a mixture of charcoal and sulphite of iron, to be used as a disinfectant in cholera.

In the Clinical Surgical Wards, Condy's fluid, sulphurous acid, and carbolic acid, were largely used, simply laid upon the wound as dressing, without antiseptic precautions; but had no effect in controlling putrefaction—amply testified on opening the folding doors which shut off Mr Syme's department from the rest of the hospital, when one was greeted with a draught of this offensive odour.

Introduction of the Antiseptic Treatment.—For several years previous to 1864, Professor Lister had directed his attention to the subject of suppuration, more especially in its relation to putrefaction, and had employed various disinfectants, such as Condy's fluid, etc., in large quantities in the treatment of wounds, but with no marked results.

It was not till the spring of 1865, that he first used carbolic acid, according to the antiseptic principle (in a compound fracture, which, however, proved unsuccessful from improper treatment). The next case was in August 1865, when a compound fracture of the leg was treated with liquid carbolic acid, and made a good recovery. The strong carbolic acid mixing with the blood, formed a hard crust, which mechanically effectually excluded the air, and prevented putrefaction occurring in the deeper parts, and thus many a serious wound healed, and became soon superficial under this treatment. But there were certain disadvantages connected with this, as, for instance, if the blood continued to ooze for some time after the application of the acid, the latter was washed away, and thus its power was lost. Then, again, carbolic acid is very volatile, and requires something to retain it. Sheet-lead, and afterwards block-tin, were introduced to act as a "protective" to the crust.

The antiseptic principle may be best explained by taking an illustration from the treatment, say, of

Compound Fractures.—A simple comminuted fracture will make a rapid and good recovery, even if accompanied by considerable bruising. But if a wound, however slight and apparently trivial, communicate with the seat of fracture, even if there be neither bruising nor comminution, it at once renders the case serious, and a cause of anxiety to the surgeon. This seems strange, until accounted for.

From earliest times, the numerous alterations in surgical dressings have been founded on one great principle, viz., *exclusion of the air;* all authors recommend, if possible, the conversion of the compound into the simple fracture, by closure of the external wound, that the risk of putrefaction and suppuration may be avoided. Many who have written on this subject, state that the atmospheric air gaining access to the seat of fracture causes the dangers that we apprehend.

That the air must at all times contain some noxious element (not a gaseous compound), is simply a matter of logical inference. We know from the researches of Pasteur and others, that it is not a vapour or a gas; that it is something solid, something which, by mechanical appliances, can, if not excluded, be at any rate deprived of its poisonous influences. Now, we cannot apply an apparatus to a wound which will effectually exclude the air (as in the infusion preserved by the hermetically-sealed flask), as the discharge must be allowed free vent. Again, it would be equally impracticable to apply an apparatus (as in the flask with contorted neck) to filter the air. But we may apply an apparatus that will act directly on the solid particles floating in the atmosphere, and deprive them of their influence. Carbolic acid possesses this property, and therefore has been employed as the reagent or medium.

Some have stated that the antiseptic treatment consists in the exclusion of the air. I need scarcely reiterate, that this is quite erroneous, and at variance with the principle. *The atmospheric air is purified (filtered) not excluded.*

From the introduction of this mode of treatment in the spring of 1865 to the present time (May 1871), although many alterations in the character of the dressings have taken place, the principle is always the same. The plan of washing-out the interior of the wound with carb. lot., and dressing it under the protection of the spray, reduces the risk of putrefaction to a minimum, and is especially useful in cases where the wound is large, and where a considerable interval has elapsed since the receipt of injury.

Several years ago, when carbolic acid was used in a much more concentrated form than at present, it was not uncommon to find, on removing the crust covering the wound, a small quantity of pus ooze away. This was simply due to the stimulating action of the acid on the tissues, inducing granulation and suppuration (antiseptic), which latter must not be confounded with suppuration consequent on putrefaction.

I am convinced that a much weaker proportion of the acid is quite sure to ensure complete absence of putrefaction.

To ensure healing without suppuration, we must not only prevent the spread of putrefaction, but also protect the raw surface from the stimulating action of the acid (by introducing a "protective" between the raw surface and the dressings). In connexion with compound fractures, let me direct your attention to a few interesting pathological facts.

Organization of the Blood-Clot.—In a case of compound fracture of the leg, in May 1866, on examining the crust some weeks after, the deeper portion was found to have become converted into living tissue. Now, in many cases of compound fracture since then, when the wound has been dressed, first, every day, and then every second day, the entire clot was found after a time to have become organized (proved by gently scraping the surface, when blood was seen to ooze away). Observed in cases 2, 5, 11, 12, 56, and 61. The first case in which I observed this was in a compound fracture of the radius, caused by indirect violence, where the small wound produced by the fragment passing through the soft parts was closed by a clot of blood, which, instead of decomposing, remained soft and intact, till, on gently scraping it some weeks after, it was found to be closely incorporated with the surrounding tissues, and bled slightly. The second case was in a compound comminuted fracture of the leg, caused by direct violence, where a clot of considerable size was, on the second day, observed to close the orifice of the wound, and which, as in the preceding case, remained soft and intact, eventually becoming living tissue. (At one time, in this case, on account of the serious nature of the accident, it was feared that sloughing might ensue, with disorganization of the clot; but neither happened, the case progressing as successfully as any of the others.) The third case was also a compound fracture of the leg, the result of direct violence, where the wound was small, and, considering the exciting cause, did not promise favourably; as, if deep-seated suppuration occurred, the pent-up discharge would have proved a very serious complication. But the discharge being trifling in amount, the clot was allowed to remain, eventually becoming organized. The fourth case was one of compound fracture of the forearm, where this interesting point was again observed. The fifth case, a compound dislocation of the ankle, the result of direct violence, where, after some time, the clot was observed to be of an orange-brown colour, and which bled on being scratched. The sixth case was after an operation for a badly-united fracture of the forearm, where the clot covering the wound became converted into vascular tissue.

John Hunter once remarked, "*If you allow the clot of blood over a small wound in a compound fracture to form a crust, the blood beneath becomes organized and absorbed as in a simple fracture.*" The explanation is evident: when the blood coagulates and forms a hard crust, it protects the parts beneath from the influence of the atmosphere, and thus freed from irritating influences becomes rapidly organized. Now, the antiseptic dressings act on exactly the same principle, by protecting not only the parts beneath, but also the surface of the crust (superficial parts) from the noxious influences of the atmosphere, and thus complete organization is allowed to take place. Again, if oozing to any extent occur, in John Hunter's case, the clot is necessarily prevented from forming. But the antiseptic treatment has this advantage, that even after considerable oozing, the clot will form. (Observed in several cases the result of direct violence.)

The next pathological point of interest of equal importance with the preceding is

The Organization of Sloughs.—It is apparently of the same nature as that which occurs in subcutaneous injuries. In a severe simple fracture, the soft parts bruised, and perhaps lacerated beneath the skin, undergo in process of time a change by which they become as it were reorganized. Again, bruised and lacerated patches of skin, etc., when left exposed to the air, putrefy, and this putrefaction may spread through the subcutaneous tissues till it reaches the seat of fracture. Now, there is no reason why, in a compound fracture, provided the bruised parts surrounding the wound be protected from the action of the atmosphere, the textures immediately beneath the skin should not also become reorganized, as in the simple fracture. The following rule may be kept in mind in connexion with what I may now fairly term, the "*Preventive Treatment of Sloughs.*" *In compound fractures and wounds generally; the result of direct violence, if on the second or third day a dusky discoloration on the skin—in short, if you have any reason to anticipate sloughing—treat that part exactly as if it had been a wound (see that the dressings overlap the entire portion of the discoloration), remembering, also, to interpose the "protective," which will prevent the risk of superficial antiseptic suppuration.*

The following cases will serve to illustrate the above remarks. See cases 5, 6, and 56. In the first case, several days after the accident, a patch two inches square was observed to be *white* and *dead* (and from the remarks of Mr Syme, we were prepared for sloughing of that portion). The area of this dead portion gradually contracted; a distinct red line marking its original dimensions, and eventually a few fine scales were all that separated, showing that the subcutaneous structures had become reorganized. Now, if sloughing and suppuration had occurred with their attendant evils, irritative fever, etc., how different, probably, would have been the result! In the second case, a compound fracture of the humerus, from the character of the injury, and the appearance of the wound, sloughing might certainly have been anticipated. In the third case, a compound dislocation of the ankle, sloughing of the skin, etc., was prevented by the antiseptic precautions. The following case shows how, the "preventive" treatment being neglected, a large slough separated. I remember, in October 1869, in a case of simple fracture of the humerus, admitted into Ward V., the result of the blow from a winch, a discoloured patch appeared, and eventually a portion of it sloughed, confining the patient for several weeks to his bed.

Professor Lister records a case of compound fracture of the forearm, in which the antiseptic treatment had been pursued with thoroughly efficient means; but after the lapse of some days he was asked to look at the limb, in consequence of unsatisfactory appearances. The dressings had been applied perfectly correctly, but the wound emitted an offensive discharge. On investigation, a small slough was observed, about half an inch in diameter, situated some inches from the wound, and just beyond the limit to which the lac plaster had been extended. On injecting some of the watery solution into this slough, it passed freely beneath the integument to the seat of fracture, and to the external wound. Had all the discoloured patches in this case been well overlapped, this would have been avoided.

The next point of interest in connexion with compound fractures to which I wish to direct your attention, is

The Organization of Bone.—Observed in cases where the bone has been exposed (subantiseptic) for some time, and eventually become covered with granulations neither separating nor causing the slightest constitutional disturbance. Let me refer you to cases 8, 20, 36, and 56. In the first case, a severe compound comminuted fracture, where a portion of the tibia 2¼ inches in length lay exposed and to all appearance dead. After a time little granulations appeared, which gradually covered the bone, and no exfoliation occurred. (If necrosis had set in, the patient would, in all probability, have lost his limb.) In the second case, when operating for a periosteal abscess, a considerable portion of the tibia was found to be bare. Healing rapidly took place without any exfoliation. In the third case, a portion of the frontal bone, about half an inch in diameter, lay bare, and eventually became covered with granulations, unaccompanied by constitutional symptoms. In the fourth case, an exposed portion of bone, resulting from a scalp wound, healed without any exfoliation, etc. Professor Lister records a fifth case, where, in a compound fracture, "an extensive portion of the shaft of the tibia had lost its vitality, and lay exposed in a large granulating sore. The granulations grew up and enclosed the dead bone, which, being prevented from putrefaction, was destitute of the usual acrid properties of an exfoliation, so that the granulations, being not stimulated by it, not only formed no pus from the surface in contact with it, but gradually consumed the dead mass by absorption."

The results of the above cases teach us that, in cases of compound fracture, where, in consequence of the severity of the exciting cause (even if sloughing does occur), a portion of bone lies exposed, necrosis, etc., may be prevented by carefully persisting in this treatment.

In connexion with compound fractures, a chapter was devoted to "The Mode of Dressing a Compound Fracture, its History and Progress, from 1865 to 1871," which must be omitted in this extract, with the exception of the mode followed in 1869–70.

On 27th December 1869, a compound fracture of the leg was treated as follows:—The patient having been removed from the cart to the general waiting-room (previous to his removal to the ward), a quantity of carb. lot. 1—40 was poured upon that portion of the stocking from which the blood trickled. His trousers and boots were then gently removed; the stocking slit up on the opposite side of the limb from the wound, and then removed under a stream of carb. lot. A piece of calico dipped in the solution was then slipped on the wound. The nozzle of the syringe, containing about 4 oz. of the lot. 1—20, was introduced into the wound, and freely injected in all directions, the external parts being at the same time kneaded to allow the lotion to permeate the neighbouring tissues. A piece of oil-silk, 2 × 2 inches, dipped in the watery solution, was then placed upon the wound (slipping the guard from beneath) to act as "protective;" then four slips of lac plaster 1—3 wrapped round the limb, extending several inches above and below the wound, applying a double layer over that part corresponding to the wound; dressing-cloth and bandage; side pasteboard splints, well padded; provided with a "bird-nest" for the external malleolus; a couple of Gooch splints to mould them to the limb. The limb was then laid on its outer side. On the following day the dressings were changed in the usual manner, with the assistance of the syringe and guard.

At the present time (May 1871), antiseptic gauze has been substituted for the lac, and this, I may mention, has several advantages. It is porous, allowing the air (purified, that is, rendered aniseptic) to reach the parts. (In fact, even when in many folds you can breathe through it like a respirator.) It renders the application of dressing-cloths unnecessary, and thus simplifies the process. The green protective is substituted for the oil-silk, and a hand spray-producer for the syringe.

On Granulation and Suppuration.—Professor Lister (*Phil. Tran.*, 1858) demonstrated, thirteen years ago, "that the tissues of the living body are liable to a temporary impairment or suspension of vital energy, as the result of extreme irritation, and that this condition may be brought about in two ways—(1.) Either by the direct operation of a noxious agent upon the tissues; or (2.) Indirectly through the medium of the nervous system. That this is also true with regard to the causes of the exaggerated but feeble cell-development, which results from the continued action on the tissues of some abnormal stimulus in a less intense form, giving rise to the various phenomena of inflammatory hypertrophy, granulation, and suppuration; the pus-cells being the extreme of excess of quantity and impairment of quality in the products of abnormally excited nutrition."

Thus Mr Lister divided the causes of suppuration into two groups—first, those that operated through the nervous system; and, second, noxious agents or stimuli acting directly on the tissues. The results of the following three simple experiments will serve to illustrate the latter of the two causes of suppuration:—

EXP. 1.—On a small granulating surface apply a piece of block-tin (fitting closely to the surface), and fix it with broad pieces of adhesive plaster. On removing this on the following day, the discharge from the sore will be found to consist of thin serum, and no pus.

Here, the access of air is effectually prevented, and putrefaction does not occur. I remember observing this in a case of carbuncle in Ward V., where, some time after the operation, a healthy granulation formed, which gradually healed by contraction. It was situated posteriorly between the scapulæ, in an admirable position for the experiment (a flat surface).

Exp. 2.—Leave another granulating surface exposed to the air, or dress it simply with water-dressing, and in twenty-four hours the granulations will be found to be studded with little points of pus.

Suppuration is here induced as the result of putrefaction (noxious agents from the atmosphere).

Exp. 3.—Dress a third granulating surface with a concentrated solution of carbolic acid, and, in a corresponding time, it also will be found to have secreted pus.

Suppuration is here induced by the direct stimulating action of the acid (destroying the vitality of the tissues superficially). This latter form is termed "antiseptic suppuration."

The above observations show that granulations have no inherent tendency to form pus.

Abscess.—Professor Lister, in the *Lancet* of July 1867, alluded to the difference between compound fractures and abscesses. "In the latter, there has been no communication with the air, and, therefore, no septic organisms are present in the interior to give rise to putrefaction. It is only when the abscess has been opened, and free access allowed to the air, that suppuration is induced. The lining wall of an abscess is similar in nature to the granulations of a sore, and has been regarded by many as essentially 'pyogenic;' but if the abscess be opened antiseptically, the pyogenic membrane being relieved from the inflammatory stimulus which the tension of the pus before induced, and being at the same time protected from the access of the stimulus of putrefaction, is left free from all disturbance, and never forms another drop of pus."

In evacuating an abscess, all the contents should be steadily pressed out under the curtain (as the pyogenic membrane is not injured thereby). So different from the old treatment of applying a poultice to absorb what remains after the operation. I may state here that, at the first dressing after the operation, you not unfrequently find several drops of pus on the cloth; but this is merely what has not been pressed out on the previous day.

In the treatment of abscesses, surgeons, from the earliest times, seem to have been aware of the evil effects following the admission of atmospheric air. Abernethy, on the supposition that the bad symptoms which so often supervene on the opening of a chronic abscess were due to the entrance of air, recommended a small valvular opening. Again, the treatment of evacuating a chronic abscess by the trochar and canula, or the exhausting syringe (by no means recent), is founded on the principle of excluding as much of the atmospheric air as possible. But there are disadvantages connected with these forms of treatment, as, if a small quantity of the pus remain, it decomposes, and gives rise in many cases to irritative fever, etc., attended often with profuse suppuration; and death by pyæmia is not of very unfrequent occurrence.

The "antiseptic" has, as in wounds generally, materially altered the treatment of chronic abscesses, abscesses connected with joints, and abscesses in connexion with diseased bone.

Chronic Abscess.—Under the old treatment, we are taught to be chary in opening them in patients of weak, strumous habit, as bad consequences are apt to follow. Thus, a favourite treatment with some, is to draw off the contents at stated intervals, which may prolong the case for many weeks. The drainage-tube is also tedious, and seems to keep up the suppuration by acting as a local irritant; but, with antiseptic precautions, we may confidently lay a chronic abscess freely open, and have the best results. See cases 16, 24, 25, and 28.

Abscesses in connexion with Joints.—Mr P. Hewett says, "that in cases where we have reason to conclude that pus has formed in the joint, rest and discutient remedies should be persevered with as long as there is any chance of absorption," referring probably to the danger of irritative fever, etc., following the operation.

Suppuration in the joint may be followed by superficial erosion or disintegration of the cartilage, and eventually complete disorganization of the interior of the articulation, and to more or less complete anchylosis. Is it not, then, a great advance in surgery when, confident in our treatment, we can freely evacuate the pus, and have a speedy recovery unaccompanied by constitutional disturbance? Let me refer you to cases 44, 45, 46. In the first case, as a proof that putrefaction had not taken place, a large plug of lint was extracted perfectly "sweet," after having lain embedded in the tissues for the long period of six weeks. The second case seems to illustrate how rapidly a joint will heal when laid freely open with antiseptic precautions. The third case also shows us how a suppurating joint may be freely laid open, all the contents freely squeezed out, and yet heal rapidly.

Abscesses in connexion with Diseased Bone.—It has long been considered dangerous practice to evacuate an abscess in connexion with diseased bone, as the risks of such sequelæ as profuse suppuration followed by hectic fever are great. But cases 31, 32, 33, and 34 show that an abscess in connexion with carious bone may be opened and still be followed by good results. I remember hearing Mr Syme remark, after evacuating a very large psoas abscess by a free incision (antiseptically), that "formerly he would have feared giving vent to the matter on account of the dangers of profuse suppuration, hectic, and emaciation, but now he was confident the patient would rapidly recover his health." The result proved that he was right. In the Appendix are detailed a few cases of lumbar and psoas abscess treated successfully. There were either two or three perfect recoveries during the winter session of 1869, but I have not been able to find full reports of them.

Concluding Remarks on Abscess.—That acute abscesses, when evacuated subcarbolically, heal rapidly, see cases 13, 15, 18, 21, 26, and 27. Complete absence of constitutional disturbance is another point observed by those who have given this treatment a fair trial.

Dr Bernard, senior Surgeon to the Royal Naval Hospital, Plymouth, informed me more than a year ago, that what first drew his attention to the antiseptic treatment was the marked change after evacuating an abscess antiseptically, from the treatment he had formerly pursued, by the absence of constitutional irritation, etc. He eventually published some instructive cases in the Naval Blue-Book, 1870.

There is no doubt that irritative and hectic fever are due in great measure to putrefaction, and therefore we can easily account for their absence when antiseptic precautions have been faithfully carried out. Let me add, that some of the objections formerly urged against this treatment are entirely surmounted by the present applications. (Carbolic paste was considered uncleanly and difficult to manage.) Nothing could be more simple, nothing more cleanly, than the application of prepared gauze folded two or three times.

I shall allude further on to the pathology of lumbar and psoas abscess, when speaking of the effect of the antiseptic treatment on diseased bone.

The Mode of Dressing an Abscess: its History and Progress from 1866 to 1871.—1866. Briefly as follows: A piece of rag, 4 by 6 inches square, is dipped in a sol. of carb. acid and olive or linseed oil 1—4, and laid upon the skin where the incision is to be made. The lower edge being raised, while the upper is kept from slipping by the finger of an assistant, the bistoury, dipped in the above sol., is plunged into the cavity of the abscess, and an opening of about ¾ of an inch made; the instant the knife is withdrawn the rag is dropped upon the skin as an antiseptic curtain, beneath which the pus flows out. The cavity of the abscess is firmly pressed so as to force out all existing pus as nearly as may be, and, if there is much oozing, a piece of lint dipped in the above sol. may be introduced into the wound, to act as a drain, doing this under the curtain, and then immediately dressed with carb. paste spread upon a sheet of block-tin 6 in. square, forming a layer ¼ in. thick. The tin is then fixed by adhesive plaster, and a folded towel placed over, to absorb discharge, secured by a bandage. To change the dressings, a second piece of tin spread with putty is prepared; then a piece of lint dipped in the oily sol. is placed on the incision the moment the tin is removed, so that the discharge may be squeezed out beneath it. The strength of the putty may be reduced to from 1—5 or 1—6, if necessary. In probing an ess, dip the probe in an oily sol. and introduce it between the folds of the rag. A piece of lint dipped in carb. oil 1—4 may be put next the skin and maintained there permanently, care being taken to avoid raising it with the putty. When all discharge has ceased, the rag is left adhering to the skin, removing the putty, and allowing it to heal by scabbing.

1868.—A double layer of plaster (lined with gutta-percha and brushed over with bisulphide of carbon) was substituted for the paste dressing.

1869.—The precautions for evacuating the abscess remain unaltered (anoint the neighbouring parts well with the oily sol., and remove any hairs). A strip of lint, dipped in carb. oil 1—10, may be introduced into the wound to act as a drain. A new preparation, consisting of shell-lac 1—3, is applied as dressing, overlapping the wound by several inches, fixed by pieces of adhesive plaster 2½ inches in breadth (applied equally on the plaster and on the skin). The syringe, charged with carb. lot., is used in changing the dressings, inserting the nozzle beneath the edge of the plaster to refresh the wound. In morbus coxarius the following lot. may be injected into the sinuses, to prevent putrefaction:—℞ Spt. methyl., ℥v.; acid. carb., ℥i.; solve. Shell-lac plaster 1—6 may be used after the discharge has lessened in amount.

Aug. 1869.—A plug of lint, soaked in carb. oil 1—20, may be used as a drain. A double fold of lint dipped in the same sol. laid over the wound covered by oil-silk, dressing-cloth, and bandage.

Dec. 1869.—The oil sol. is altered to 1—5, and copal plaster used as protective. Putrefaction may be prevented, or at any rate arrested, by injecting ℞ Zinci chloridi, gr. xl.; aquæ, ℥i.; solve.

If an abscess is pointing, but you wish to postpone opening it for a day, it may be as well, as a precautionary measure, to apply the dressings in the usual manner. If it should burst, it is in an antiseptic atmosphere.

May 1871.—Antiseptic gauze is now employed as a substitute for the lac, secured by gauze bandages. The green protective is used as formerly.

The Effect of the Antiseptic Treatment on Caries.—Caries has always been regarded as a very formidable affection, and by many as incurable (except in situations where it can be completely removed by operation). Mr Syme at one time compared it with cancer, on account of its obstinacy. Professor Lister regards caries as "merely the suppurated stage of chronic inflammation in a weak form of tissue, and that it exhibits the tendency of inflammatory affections generally, viz., a disposition to spontaneous cure on the removal of the irritation." Mr Syme latterly remarked, that "caries is the effect instead of the cause of suppuration." We know that necrosed bone lying exposed for a considerable time may not only be completely covered, but even absorbed, if antiseptic precautions be persevered with throughout. As confirming Mr Lister's remarks, let me refer you to cases 31, 32, 33, 34, and 37, of which the first four are all cases of psoas abscess connected with diseased bone; and in two, fragments of diseased bone were detected in the discharge. The fifth case was one of caries of the elbow-joint, treated successfully. Dr C.'s case illustrates how patience and perseverance may be rewarded.

The Effect of the Antiseptic Treatment on Affections of Joints.—The conservative influence of the antiseptic treatment on surgery, is well exemplified by its results in the treatment of joints generally, more especially in diseases of the knee-joint. In bursitis patellæ, we do not hesitate to operate by a free incision. The injection of stimulating lotions, such as tincture of iodine, etc., is quite unnecessary, as the membrane has no tendency to form pus (treated antiseptically). See case 40.

Loose Cartilages of Joints.—The method of removing the cartilage by the direct operation may be adopted fearlessly. It is the simplest and most effectual treatment, provided we are safe from the risk of suppuration, etc. See case 43, and one of Mr Bickersteth's, where the wound in both cases healed rapidly, unaccompanied by fever, etc.

Suppurative Synovitis, generally regarded as a very formidable affection of the joint, may be treated "radically" with confidence. See cases 44, 45, and 46.

Tumours of the Mamma.—Professor Lister has adopted, in scirrhus of the mamma, a most effectual mode of treatment for the removal of the disease, viz., dividing the pectoral muscles and dissecting out the axillary glands. Patients on whom this operation had been performed recovered as rapidly as cases of removal of simple adenoid growths; see cases 48, 49, 50, and 51. The peculiar odour proper to the axilla and groin was remarked in several of the above cases. It must not be confounded with that of putrefaction.

Tumours of the Superior and Inferior Maxilla.—The application of an external antiseptic dressing would be useless, as the contents of the mucous cavity constantly furnish the germs of putrefaction. But a strong solution of chloride of zinc has been found to answer admirably, having a remarkably persistent antiseptic influence, the discharge remaining "sweet" for several days. It is a great improvement on the old treatment of plugging the cavity with lint (unprepared), which when extracted, after a few days, is very offensive from decomposition. Case 62 shows how Condy's fluid was tried on account of the fetid odour, but did not seem to have been effectual. For cases illustrating the use of chloride of zinc, see 63, 64, and 65.

Burns and Scalds.—In the Appendix are detailed a few cases of burns and scalds, where the application of a mixture of carbolic acid and Carron oil, covered by gutta-percha tissue, was employed. bolated wool may also be used with advantage.

Effect of the Antiseptic Treatment on the Ligature of Arteries.—Professor Lister states, "that when an ordinary ligature is applied to an artery the internal and middle coats are ruptured, while a portion of the tough external coat is pinched together and deprived of its vitality. The dead tissue, being contaminated by the putrefaction which occurs in the interstices of the silk fibres, acts, together with the septic ligature, as a cause of irritation to the neighbouring parts of the arterial wall, which consequently degenerates into an imperfect structure, inadequate to withhold the powerful cardiac pulse; hence, if a considerable branch takes origin close to the part tied, the formation of a clot being prevented by the current of blood, secondary hæmorrhage is the inevitable consequence." Thus, it is evident that the great risk in those cases is putrefaction, occurring at a point where the vessel is of degenerate structure, and sudden hæmorrhage taking place. But being able to prevent this putrefaction, we thus have a direct control over suppuration, one of the commonest causes of death. We can readily comprehend that if large portions of dead tissue, pieces of exposed bone, and blood-clots become organized, how the small dead portion of the external coat of an artery becomes, after a time, absorbed.

In this treatment silk ligatures were first used, which had been steeped in a watery sol. of carb. acid. They caused no irritation, remaining embedded in the tissues, just as any hard impermeable substance, but were, of course, not absorbed. Catgut ligatures were next tried and proved successful in an eminent degree. They are prepared by suspending the catgut in a mixture of carb. acid, water, and olive oil (in the following proportions—carb. acid crystals 25 oz., water 1¼ oz., and olive oil 125 oz.), so that it may be kept clear of the water (precipitated). The vessel should be kept cool, say at a temperature of 46° F. The ends are cut close off at the knot, which eventually become absorbed.

Let me briefly state the result of the following experiment:—

Ligature of the Common Carotid of a Rabbit with Catgut.—18*th March* 1871. The animal being put under chloroform, an incision about two inches was made, and the skin carefully divided. On dissecting down, a very large vein was exposed, which lay superficial to the sterno-mastoid. This was gently held aside by a blunt hook; the artery was then exposed, lying close to the trachea, having the pneumogastric nerve on its outer side. Two ligatures of the thickest kind of gut were applied, the ends cut short, and the intermediate portion of the vessel removed and submitted to microscopic examination (to be quite sure it was the artery). The wound was then carefully sponged out with carb. oil 1—5, and the edges brought together with prepared silk sutures. Several folds of lint dipped in this lotion were then applied as dressing, and the animal placed in a basket before the fire. The instruments, etc., were dipped in the 1—40 lot. The animal cried a good deal when first put under chloroform, and seemed to be thrown into a state of hyperæsthesia. About an hour after the operation it was nibbling at its food as if nothing had happened.

19*th March.*—The boy who has charge of the rabbits informs me that this rabbit consumed a greater quantity of food in the twenty-four hours than another, which had not been experimented on.

23*d March.*—Wound perfectly healed; animal quite healthy; no suppuration. Exactly three weeks and two days after the operation, the animal was killed.

Post-mortem Examination.—The skin was reflected by a quadrilateral flap including the cicatrix. The textures beneath the cicatrix were slightly adherent. Both knots were exposed (the cardiac one dissected down to the heart, which was removed along with it). *General appearance.*—On making a section of one of the knots, a dark speck was observed in the centre, which, on being gently drawn out by the point of a needle, proved to be the artery, reduced to about one-fifth of its original size, and firmly embedded in the surrounding tissue, which had a faintly pink hue, as if injected. *Microscopic examination.*—On making a fine section of the knot, and teasing it out with needles, it was found to consist of delicate parallel wavy lines—in short, areolar tissue (showing its ordinary characters). On the addition of acetic acid, the field became almost transparent, and showed a good many nuclei. There was not sufficient time allowed for the entire absorption of the ligature, as the animal was killed only three weeks after the operation. This was done purposely to observe how far matters had progressed. I may add, that, in the dissection, the knots were with difficulty separated from the surrounding tissue, with which they had become closely incorporated. Thus it was evident, that the greater portion of the ligature had become organized.

The Mode of Dressing an Amputation: its History and Progress from 1866–71.—1866. Amputations were dressed at this time in a similar manner to compound fractures. Large pieces of lint, soaked in carb. acid, applied, enveloping the stump, covered with gutta-percha or lint, dipped in the oily sol.

1867.—Carbolic paste, applied in the same manner as in abscesses.

1868–69.—Amputations were dressed with indiarubber tubes as follows:—The stump was enclosed in an indiarubber tube, and a knot tied at the face of the stump. Then a fold of lint, dipped in the following sol., placed within the tube, and a second knot applied, keeping this close against the stump, but not touching it: ℞ Acid. carb., ℥i.; glycerine, ℥iv. Solve. Then two long strips of lint, dipped in the same sol., applied around the upper part of the stump to act as antiseptic reservoirs. A folded towel wrapped round the upper part to absorb discharge, and the stump laid on a pillow. The tube is easily removed (like pulling off a finger-glove), the nozzle of the syringe being inserted beneath to refresh the wound, and a large piece of calico dipped in the 1—40 sol. slipped on immediately on the withdrawal of the tube. The lint, dipped in the glycerine sol., is then changed, and the dressings reapplied. Thus the wound is exposed to a constant antiseptic atmosphere.

I have entered into this rather minutely, as it explains so well the "principle." The dressings do not come in actual contact with the wound, but still preserve it in a thoroughly antiseptic atmosphere. This also serves to explain the principle on which the antiseptic acts when applied in cases of psoas abscess.

1869.—A large 40-oz. bottle of carb. lot., 1—40, is taken into the theatre, from which the basins are filled. One basin is placed aside, into which all the instruments to be used are dipped. The sponges are also wrung out of the lotion. The saw is anointed with oily sol., 1—10. The operator and his assistant dip their fingers in the lot. The large vessels secured with catgut, the ends cut short, and the smaller ones twisted. The wound is then sponged out with the watery sol., and the flaps brought together, except at the most dependent part, to allow vent for the discharge. A strip of lint, dipped in the oily sol., 1—10, is introduced into the wound to act as a drain. Then the stump is enveloped in a double layer of lac, 1—3 (stripped of its calico), and a large piece of oil-silk applied, to prevent the risk of air entering by any cracks. Dressing-cloth and bandage. It should be dressed on the following day as follows: Remove the plaster gently, inserting the nozzle of the syringe; then slip on the guard. Take an ordinary towel, and soak it in the watery sol., 1—20, and apply it, so as to envelop the stump (funnel-shaped), so that, lifting the edges, you may examine the stump and remove the drain. Then a broad piece of lac is applied around the stump and towel; from the interior of which the latter can steadily be withdrawn, closing the lac over the face of the stump. Then apply the dressings in the usual manner. On the fourth day, a strip of lint, two inches in length, dipped in the 1—20 carb. oil, may be applied along the wound as "protective." If the stump require strapping, cut two strips of lac, and with a dry towel remove the gutta-percha. Then lay over it pure carb. acid.

Nov. 1869.—A towel soaked in the following sol. was wrapped round the stump and kept moist during the first twenty-four hours: ℞ Acid. carb., ʒi.; glycerine, ʒv.; water, ʒxx. Solve. A piece of lac, 8 × 8, laid on the pillow to act as an antiseptic basis. On the following day it is dressed in the usual manner. The stitches (that were merely inserted loosely) are tightened as follows: An assistant steadily drops the lotion on each stitch as it is being tightened, and a little piece of calico is at the same time slipped on it, and so on till they are all finished. The "protective" is pinned to the guard, and thus applied.

1871.—Amputations are performed and dressed under the carbolic spray. Prepared gauze applied as dressing with green "protective."

The following is a list of the various preparations used in the Antiseptic Dressings, 1866–71:—

1866.—Liquid carbolic acid.

1867.—Carbolic paste.

1868.—(*a.*) Emplastra. (*b.*) Bees-wax; carbolic acid. (*c.*) Emp. plumbi; bees-wax, $\frac{1}{4}$; carb. acid, $\frac{1}{10}$. (*d.*) Shell-lac. (*e.*) Shell-lac; gutta-percha. (*f.*) Shell-lac, 3; gutta-percha, 1; carb. acid, 1; bisul. of carb., 30. (*g.*) Shell-lac, 6; carb. acid, 1.

1869–70.—(*a.*) Shell-lac, 3; carb. acid, 1.

The "Protective."—(*a.*) Carbolic acid; blood. (*b.*) Calico dipped in the oily sol. (*c.*) Sheet-tin.

1869.—Oil-silk; watery sol. Gum copal, 3; carb. acid, 1.

Feb. 1870.—Oil-silk, coated with copal, and brushed over with carb. acid and dextrine; gold-leaf.

On Fermentation and Putrefaction.—Pasteur stated that there are at all times suspended in the air organized corpuscles; that the dust of the air, when placed in the presence of an appropriate liquid, in an atmosphere of itself quite inactive, gives rise to various products, such as the Bacterium Termo, and many varieties of fungi. Again, that the lactic and butyric fermentation were always associated with the presence of organized beings; that, in fermentation, yeast, appropriating a certain percentage of sugar, causes the rest to be transformed into carbonic acid and alcohol (the products of fermentation; that the presence or absence of oxygen was immaterial to the production of putrefaction and fermentation.

With regard to Fermentation.—The investigations of Redi, Schwann, Helmholtz, Ure, etc., proved that putrefaction was caused by solid matters constantly present in the atmosphere, which only required time and a suitable nidus to develop themselves.

That the atmospheres of certain localities are more prejudicial, as it were, than others to putrefaction, is to be inferred.

Let us see what bodies may be found in the neighbourhood of fetid discharges and noxious emanations.

Chalvet, of Paris, made a series of investigations into the salubrity of hospitals, and found, by a careful analysis, that the air in the wards of St Louis contained a considerable percentage of starch corpuscles; that a large quantity of putrescible matter was collected on the bed-curtains, on the walls and windows, etc.; also that the linen returned from the laundry was stained with organic detritus, linseed, and spots of various kinds. He also showed that water condensed in the neighbourhood of a suppurating focus is strongly charged with irregular corpuscles, resembling dried pus. Dust collected from the walls of St Louis (wards) furnished no less than 36 per cent. of organized matter.

Eiselt, of Prague, found small cells, resembling pus-corpuscles, spread through the air of a ward in which an epidemic of purulent ophthalmia was raging.

Reveil found that those cells floating in the air, and the debris of epithelial cells, become yellow on the application of nitric acid; also that pieces of charpie abounded in those corpuscles. The dust in his laboratory furnished 46 per cent. of organic matter.

Kallman found organic debris encrusted with a granular substance, which gave a reaction of copper, the dust having been collected in the ophthalmic hospital, where sulphate of copper was much used.

Thus, the researches of Chalvet, Eiselt, Reveil, and Kallman, prove that the atmosphere of the surgical wards of an hospital is largely impregnated with organic matter. What condition could be more favourable for the development of those morbid germs and ferments than the surface of a wound exposed unprotected to such atmospheres? On the theory of catalysis—that is, the introduction of a small quantity of virus, and the septic changes which take place in the blood to which it has gained access—we can readily understand how important it is to exclude the most minute portion of the air of a ward containing such a large percentage of organic matter. But we know that exclusion is unnecessary, provided the air be filtered or purified, thus rendering it innocuous.

Davaine showed that those low germs of life seriously affect the blood of the higher animals. He discovered Bacteria (probably including vibriones, etc., under the general term Bacterium) in the blood of malignant pustules, in the blood of *typhoid fever*, and in the blood of sheep which had suffered from splenic apoplexy.

Tigri and Signol corroborated the statements of Davaine.

The Effect of Noxious Emanations such as those evolved from Marshes, Cesspools, etc., on Fermentation and Putrefaction.—The theory that such affections as cholera, typhoid fever, smallpox, diphtheria, intermittent fever, etc., may be traced to what are termed "germs" generally, is by no means of recent date. It is a subject of the most vital importance, involving such questions as drainage, isolation, the use of antiseptics and disinfectants, and affects essentially the treatment of such diseases (preventive and curative). Dr Barker conducted the air of a cesspool, containing sulphuretted hydrogen and sulphide of ammonium, into a box in which animals were confined, and the symptoms which resulted resembled the minor forms of continued fever, common to the dirty and ill-ventilated houses of the lower classes. This he attributed to the gaseous matters. Now, I think that these symptoms resulted from the quantity of organic matter (low organisms and fungi) contained in such an atmosphere.

Dr D. Thomson recognised the importance of organic matter as a constituent of the air of towns, and held that the gases evolved during putrefaction are not the main source of danger.

Place a globe filled with ice over a cesspool, and in a short time the matter contained in the aqueous vapour will be condensed on its surface. The liquid will be turbid, have an offensive odour and alkaline reaction, and contain small flakes of matter, which, under the microscope, have the appearance of organic debris, and contain vibriones, monads, and other forms of low life, with fungoid filaments. A similar result may be obtained on placing a bell jar over putrid meat. Can we be surprised at fermentation and putrefaction being readily set up in such neighbourhoods?

Dr Salisbury says, that the spores of fungi are, at least, the vehicles by means of which the malaria-poison gains entrance into the human frame; that a disease analogous to measles, which occurred as an epidemic during the American war, arose from the prevalence of a fungus (*penicillium*). This he concluded from a large number of men arising with symptoms of measles, after sleeping on straw which was muddy and had a peculiar odour; and by inoculation with this fungus he set up in many persons, in from twenty-six to ninety-six hours, a disease closely resembling measles.

Dr Snow says, that although cholera is disseminated by a special cell, it offers no objection to the view that the structure of the cholera-poison cannot be recognised by the microscope; for the matters of smallpox and chancre can only be recognised by their effects, and not by their physical properties.

Dr Halford states, that when a person is bitten by the cobra, minute living germinal matters are thrown into the blood, which speedily grow into cells, and as rapidly multiply, so that in a few hours millions upon millions are produced.

Dr Kennedy, in 1863, relates the case of a disease, in all respects resembling measles, produced in a young lad who had some fusty linseed-meal thrown in his face, entering his eyes, nostrils, and mouth.

During the epidemic of malarious fever in the Mauritius, the presence of fungoid spores identical with cryptogams, found in the stagnant pools of Grande and Petite Rivière, occurred throughout all the mucous surfaces, and in most of the secretions, of patients labouring under the disease.

Dr Massy, in the Army Indian Reports, remarks, that in the dry season there was an unusual quantity of aerial spores of Mucor in Jaffera, where there was an increased prevalence and intensity of intermittent fever. He detected similar organisms in almost all the specimens of the drinking water of the island which he examined. He found them in the pus crusts and hairs taken from a form of ringworm (*frambœsia*). These ulcers are common among badly-nourished native children, and are now treated by the application of sulphurous acid. He detected a residue, consisting of torula spores, mycelia, and active vibriones, in the urine, perspiration, and fæces of patients suffering from malarious fever.

I have alluded to those researches of Halford, Kennedy, Massy, Salisbury, and Snow, to show how many forms of fever, etc., may be traced to the absorption of these low organisms and fungi.

Take typhoid or enteric fever—the pythogenic fever of Murson (πυθογενης, from πυθων, πυθομαι (putresco), γενναω). It generally arises in the neighbourhood of decomposing matter, cesspools, stagnant water, drains, etc.—in short, where putrefaction and fermentation are prevalent. It is not contagious, but is communicated by means of the alvine secretions, which doubtless contain the poison. It has been remarked that the stools of enteric fever are very prone to decomposition and fermentation; again, that it occurs most frequently in hot weather (favourable to putrefaction).

Now, that it is from the quantity (and, possibly, from the virulent character) of the organism and fungi contained in such atmospheres that typhoid fever owes its origin, is, I think, evident.

In connexion with this subject, I may here briefly refer to an experiment instituted to test the effect of an atmosphere emanating from fetid matter on a putrescible fluid.

A small basin, filled with very fetid matter (collected from jars containing frogs' legs and other preparations steeped in water, and which had been laid aside for several months, pus, blood, etc.), was placed on a ledge outside the laboratory window, Physiological Laboratory of the University. A Wolfian jar half filled with urine, fitted with two glass tubes, one bent over the basin and the other connected by elastic tubing with a Sprengle's air-pump, was placed beside the basin. A second Wolfian jar, similarly charged, was placed on a shelf in the laboratory. Then a small flask was also half-filled with a portion of the same urine, but boiled and plugged with carbolated wool, and placed beside the basin containing the fetid matter. The Sprengle pump was then started, and thus the air emanating from the matter was drawn over the urine. On examining this jar after the lapse of seven days, it presented the following appearance:—Colour, muddy yellow, thick white scum on surface; odour very fetid. *Microscopic Examination.*—Field literally crowded with organisms; numerous bacteria and other minute organisms. The jar placed in the laboratory presented the following characters:—Colour, muddy yellow, but not so marked as in the other jar; very thin scum on surface. *Microscopic Examination.*—Numbers of bacteria, and a few thin, short vibriones, of a dark colour, moving sluggishly. The contents of the flask plugged with cotton remained perfectly clear, and apparently unaltered; the plug had a very fetid smell, and was quite black with dust, etc.

The differences thus—as observed from the general appearance of the urine, the quantity and character of the organisms in the jar exposed to the fetid atmosphere—contrast forcibly with the contents of the laboratory jar, where decomposition was evidently in a much less advanced stage. The fact of the plugged flask remaining unaffected, shows that the gases evolved produced no bad effect, therefore it is clear that the exciting causes of putrefaction were filtered and retained by the meshes of the cotton.

Professor Lister, alluding to the noxious influences of the atmosphere, says,—"Grave results are induced by access of the atmosphere in compound fractures, etc. The decomposition of the blood effused among the interstices of the tissues, losing by putrefaction its naturally bland character, assumes the properties of an acrid irritant, occasioning both local and general disturbance."

The theory of fermentation and putrefaction, in its application to medicine and surgery, especially the latter, is not based on logical inference solely, but on the results of observations and experimental research. It is no longer a matter of conjecture that impure air, more especially air emanating from noxious sources, may account for the disastrous consequences so frequently met with in the crowded wards of a surgical hospital.

HOSPITALISM.

The Effect of the Antiseptic Treatment on Erysipelas, Hospital Gangrene, and Pyæmia.—The theory that pyæmia is due to some atmospheric influence is not of recent date.

Ambrose Paré (1582) first taught that secondary abscesses in surgical cases were due to a changed condition of the fluid produced by some unknown alteration in the atmosphere, and determining a purulent diathesis.

Solly considers that the presence of pyæmia at the present time is dependent on some occult atmospheric cause over which we have no control, and that the secondary suppurations are owing to purulent absorption.

Callandar remarks, that an animal or septic poison introduced into the system is the exciting cause of the primary disease—systemic infection. It is connected in some subtle manner with a vitiated condition of the blood. The blood undergoes decomposition, or passes into a state of fermentation.

Wilkes considers that pus or its elements, or germs, give rise to purulent deposits, as the cancer germs give rise to cancer.

Savory ascribes it to some putrid fluid poisoning the blood.

Wood supposes the alterations in the blood to be of a zymotic nature.

Polli ascribes to this morbid process a fermentative character.

Braidwood gives to pyæmia the term "suppurative fever," and states that it is not contagious, and, although sometimes prevalent, cannot be strictly spoken of as epidemic; in another part of his work, that "pus, as such, has nothing to do with inducing suppurative fever, nor do its liquid contents produce this condition; but it is probable that some catalytic process is excited by purulent fluids in contact with imperfectly oxygenized blood."

Polli, at the British Medical Association, 1867, remarked,—"It has long been admitted that there are diseases whose cause and origin is a specific ferment, either generated in the system or introduced from without."

Bataillhé treats cases of pyæmia by dressing their wounds with ·oholic fluids, so as to prevent the putrefaction of the discharge, to close the mouths of the open veins and lymphatics.

Savory remarks, in some very bad cases the blood is putrid at the time of death, judging from the odour and changes which the blood and soft tissues present by rapidly-advancing decomposition.

Castleman and Ducrest made experiments on animals, and came to the following conclusions:—1. That multiple abscesses are due to a changed condition of the blood, which is most frequently produced by the presence of a foreign principle in this fluid. 2. That when abscesses are developed in certain other diseases, the principle is that which gives rise to the disease itself. 3. That in those abscesses which are developed in the puerperal state after traumatic lesions, surgical operations, or phlebitis, the principle is pus. 4. That the progress, prognosis, and treatment of these abscesses entirely depend on the nature of the cause that has produced them.

Pyæmia is grouped in many surgical works with erysipelas, diffuse inflammation of the cellular tissues, and other inflammations of a low or sthenic type. Erysipelas, however, is contagious, whereas pyæmia is not.

The exciting cause of that surgical fever known as pyæmia has been a matter of dispute for hundreds of years. Some stated that it was due to an atmospheric influence, but did not, or rather could not, define it; others, again, that it was due to the absorption of decomposed matter; others that it was due to some ferment. Nothing definite, however, has ever been stated with regard to its etiology. Now, I think we may venture to hope that a solution of this hitherto inexplicable question is not far distant. That the antiseptic treatment has effectually driven pyæmia from the wards (where it has been faithfully carried out) is a matter of fact, the result of detailed statistics.

Mr Lister published, in a pamphlet in 1869, statistics taken from a period preceding and subsequent to the introduction of the antiseptic treatment, in which he showed that only two cases of pyæmia (the causes in both of which were accounted for) had occurred in his ward during the latter period. Again, in the *Lancet* of August 1870, he stated that no cases of pyæmia had occurred in his wards during the nine preceding months (that is, since his appointment to the Edinburgh Infirmary).

I remember, in 1866, in the clinical surgical wards, pyæmia, hospital gangrene, and erysipelas were all very prevalent. In Ward IV., there were, at the same time, two cases of pyæmia, two cases of hospital gangrene, and one of erysipelas. The two cases of hospital gangrene are particularly impressed on my memory, as I attended both of them subsequent to their removal from the hospital. In one case, a patient was admitted suffering from a small callous ulcer of the leg; and, as it was a typical case, he was taken in to lecture, where Mr Syme, after describing the case and explaining the treatment, remarked that in a very short time he would be quite well. That day week a small grayish spot appeared on the edge of the sore. It was immediately and thoroughly cauterized with strong nitric acid (the truth is, we were too well acquainted with these cases, and could diagnose them early), and poultices applied, but all to no purpose. It spread very rapidly, and at Mr Syme's recommendation he was removed to his own house. The gangrene ate nearly to the bone; and when at last the disease was arrested, a sore 6 by 4 inches remained. Gradually, however, he recovered, although for some time he appeared to be in a dying condition. The other case, in the same ward, was one of abscess of the head of the tibia, where, two days after the operation, the gray spot appeared, extending rapidly. He also was removed home (two miles to the west of Edinburgh). In this case, like the former, the disease was not arrested till several inches of the tibia was exposed. He eventually made a slow recovery, and was still an invalid when I last heard of him (two years later). Both the cases of pyæmia were fatal. In short, death from pyæmia was, alas! of too common occurrence.

During the last two and a half years, there has not been a single case of pyæmia. I have not seen or heard of any cases of hospital gangrene since the time referred to above. Two cases of superficial erysipelas, indeed, occurred in December 1869, both the result of sudden exposure to cold. One, an amputation above the knee, was taken, five days after the operation, to the theatre, and dressed at lecture. It was a bitterly cold, foggy morning (the gas had to be lit), and, shortly after, a slight erysipelatous blush appeared, which very soon subsided.

Do not these simple facts speak for themselves?

Thus, a relationship between pyæmia, hospital gangrene, and erysipelas (the dreaded scourges of our large hospitals) may be traced, from the fact of their disappearance coincident with the introduction of Antiseptic Surgery.

CLINICAL CASES.

TABLE I.—*Compound Fractures.*

	Name.	Ward.	Age.	No. of Case.	Date of Admission.	Disease.	Date of Dismissal.	Event.
I. Compound Fractures resulting from *Indirect Violence*, as for instance—								
(*a.*) A simple converted in a compound fracture by the bone being thrust through the soft parts when carried to the hospital; particularly liable to occur in small oblique fractures, . . .	Thomas Pollock,	III.	5	1	Sept. 30, 1867	Compound fracture and wound of leg	Oct. 16, 1867	Recovered.
(*b.*) A patient falling or jumping from a height, and the fractured end thrust through the soft parts, ...	Name unknown,	Waiting Room	50	2	Sept. 27, 1869	Compound fracture of radius	Jan. 10, 1870	"
	Ann Law,	III.	25	3	Nov. 18, 1867	Compound fracture of tibia and fibula	Dec. 31, 1867	"
	John Smith,	V.	...	4	Feb. 29, 1868	Compound fracture of tibia and fibula	May 7, 1868	"
II. Compound Fractures resulting from *Direct Violence*—								
(*a.*) Caused by a sharp instrument, .	...	...	...	...	...	......	...	...
(*b.*) Caused by the blow of a piece of metal attached to machinery in rapid motion, or by the blow of a windlass, .	James Cowie,	V.	35	5	Dec. 27, 1869	Compound comminuted fracture of tibia	Feb. 1870	"
	James Geehone,	V.	30	6	July 4, 1868	Compound fracture of humerus, radius, and ulna	Oct. 3, 1868	"
	Albert Tronskasski,	V.	18	7	Aug. 10, 1865	Compound fracture of humerus	Sept. 20, 1865	"
(*c.*) Caused by a weight falling on the limb, as a stone or loose debris, . .	David Johnstone,	VI.	23	8	June 26, 1869	Compound comminuted fracture of tibia and fibula	Sept. 14, 1869	"
	James Cupples,	II. P.	17	9	July 30, 1869	Comp. fracture of lower jaw	Sept. 11, 1869	"
	Edward Sweenie,	VI.	16	10	June 27, 1869	Compound fracture of tibia and fibula	Aug. 19, 1869	"
(*d.*) Caused by a lorry or cart wheel, or railway truck, passing over the limb, ...	Thomas Howard,	IV.	40	11	Nov. 22, 1869	Compound fracture of tibia and fibula	Jan. 1870	"
	Name unknown,	Waiting Room	11	12	Dec. 23, 1869	Compound fracture of radius and ulna	Feb. 1870	"

CLINICAL CASES.

TABLE II.—*Abscesses.*

		Name.	Ward.	Age.	No. of Case.	Date of Admission.	Disease.	Date of Dismissal.	Event.
Acute.	Circumscribed.	Thomas Graham,	R.W.B.	23	13	Oct. 18, 1869	Acute circumscribed abscess (post auricular)	Oct. 27, 1869	Recovered.
		John Gardiner,	R.W.B.	54	14	Nov. 29, 1869	Abscess on forehead	Dec. 7, 1869	„
		Hector Park,	III.	6	17	Dec. 18, 1869	Abscess on occipital region	Jan. 3, 1870	„
		Jane Beattie,	III.	23	18	Dec. 29, 1869	Abscess, sub-maxillary	Jan. 4, 1870	„
		Eliza Wilson,	III.	6	19	Jan. 4, 1870	Abscess, post scapular	Jan. 14, 1870	„
		Walter Stewart,	III.	5	20	Aug. 3, 1869	Periosteal abscess of tibia	Sept. 10, 1869	„
		Mary Macdonald,	III.	11	23	Nov. 26, 1868	Acute periostitis of tibia	Dec. 26, 1868	„
		Mary Mackay,	II.	25	29	April 18, 1868	Abscess, axillary	May 2, 1868	„
	Diffuse.	William Nelson,	V.	36	15	Dec. 24, 1869	Diffuse abscess of thigh	Jan. 8, 1870	„
		Jemima Collins,	III.	27	21	June 8, 1868	„ „ of „	July 6, 1868	„
		James Jack,	IV. P.	44	22	Sept. 1, 1868	„ „ beneath scalp	Sept. 21, 1868	„
		Thomas Dawson,	VI.	59	26	Dec. 4, 1867	„ „ of forearm	Dec. 12, 1867	„
	Infiltrated.	Andrew Ramsay,	R.W.B.	...	27	Feb. 24, 1868	Infiltrated abscess of thigh	March 2, 1868	„
Chronic.		Mary Mackie,	III.	5	16	Nov. 29, 1869	Chronic abscess of leg	Dec. 14, 1869	„
		Jessie Kay,	I.	8	24	Sept. 6, 1869	„ „ of cheek	Oct. 2, 1869	„
		Christina Allen,	II.	25	25	Dec. 1, 1867	„ „ of mamma	Dec. 9, 1867	„
		Alexander Black,	IV.	...	28	March 14, 1868	„ „ of side	March 14, 1868	„
Lumbar abscess.		William M'Farlane,	III.	6	30	Sept. 12, 1867	Lumbar abscess	Nov. 18, 1867	„
Psoas abscesses.		William Helbert,	IV.	47	31	Oct. 28, 1867	Psoas „	Dec. 17, 1867	„
		No name,	Glasgow	27	32	Jan. 22, 1870	„ „	Feb. 5, 1871	„
		No name,	Glasgow	25	33	July 27, 1867	„ „	Aug. 1867	„
		No name,	Glasgow	...	34	June 1867	„ „	July 1867	„
Abscess connected with carious bone.		No name,	Glasgow	...	37	Sept. 1867	Abscess of elbow connected with caries	Nov. 1867	„

Fig. 1

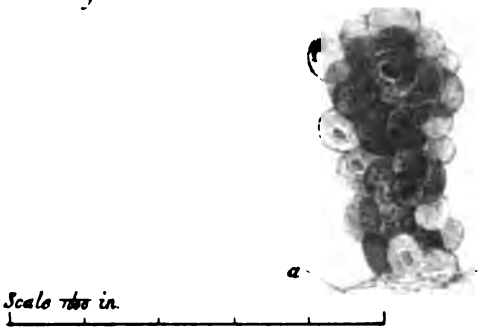


Fig. 2

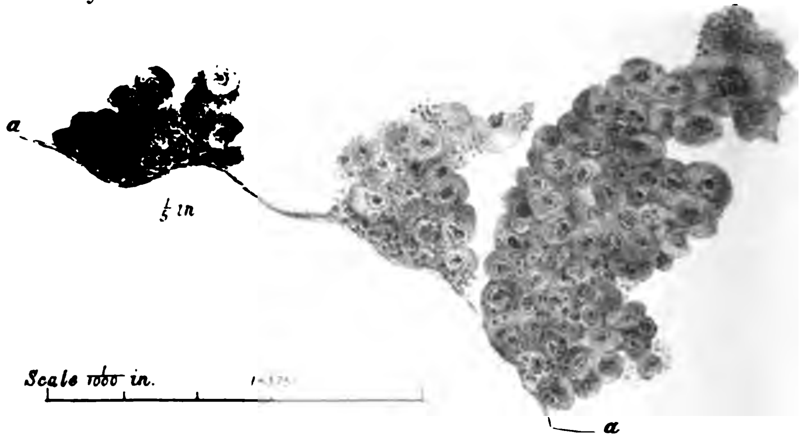
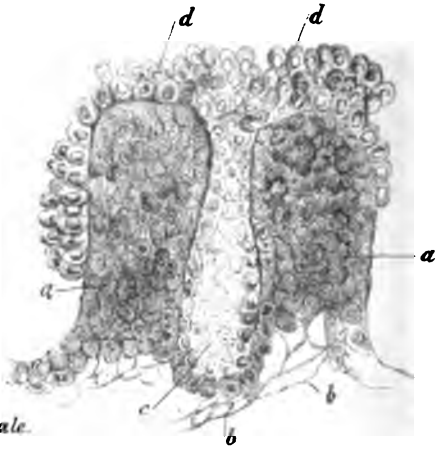


Fig. 3



$\frac{1}{5}$ inch object.
Not drawn to exact scale.
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PLATE II

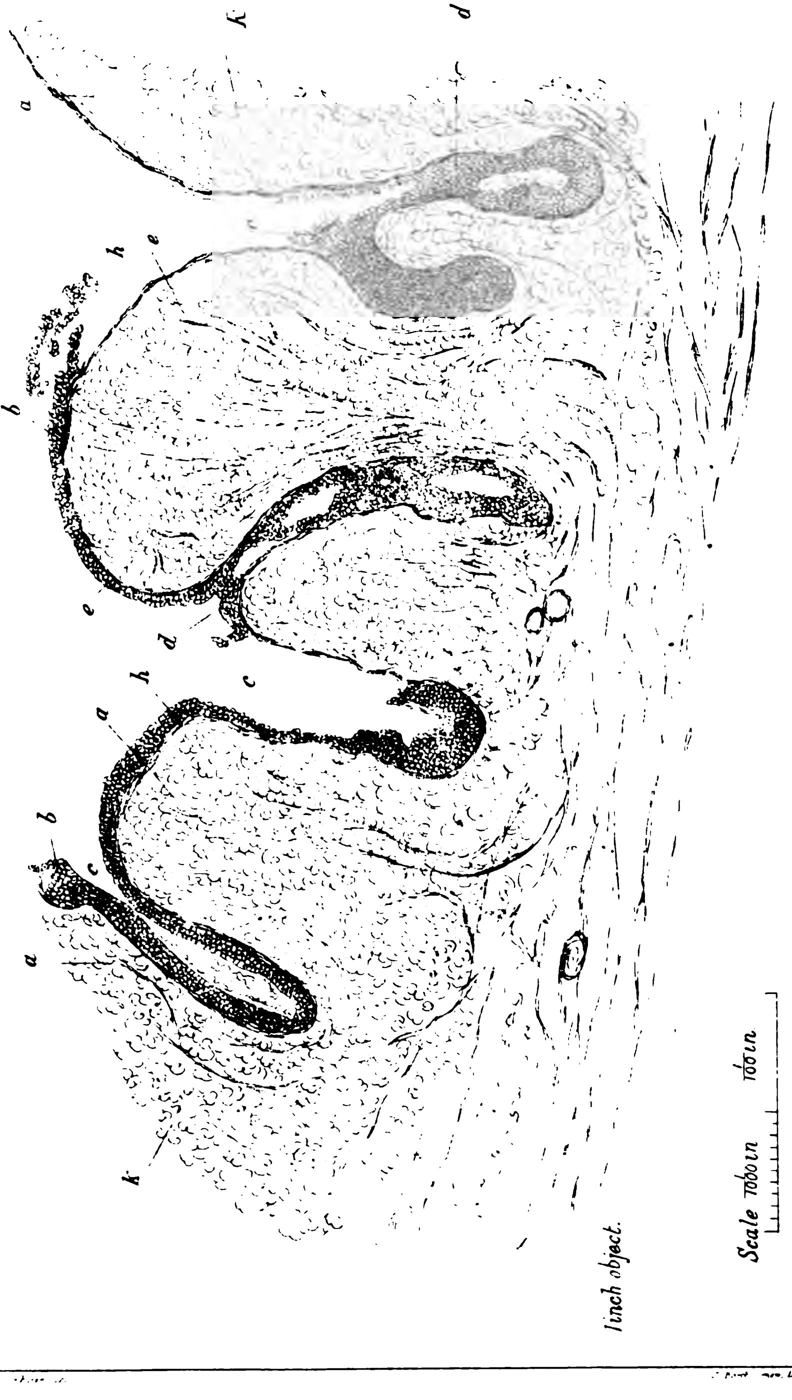


Fig 1

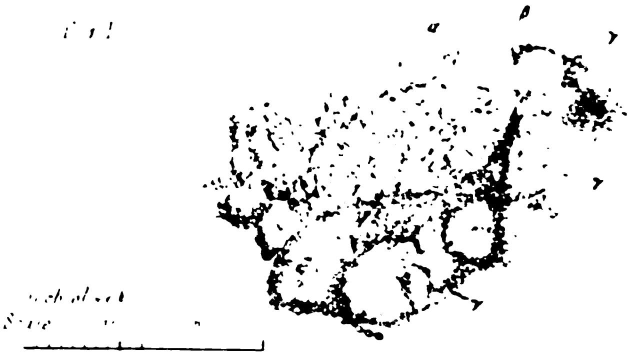


Fig 2

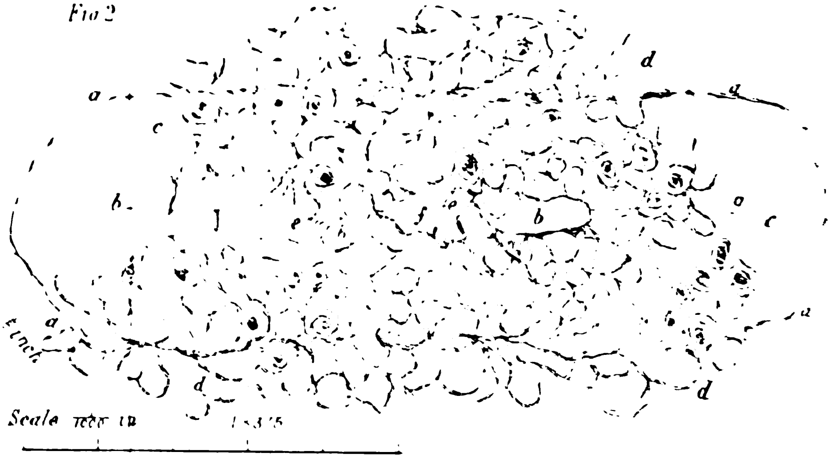
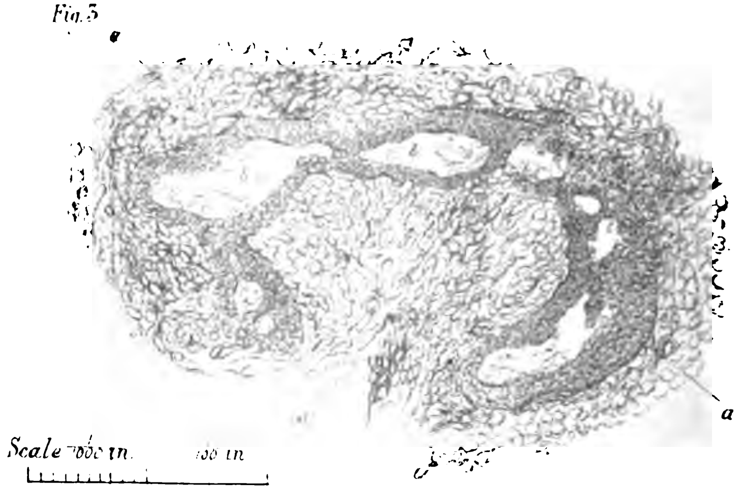


Fig 3



CLINICAL CASES.

TABLE III.—*Affections of Joints.*

	Name.	No. of Ward.	Age.	Date of Admission.	Disease.	Date of Dismissal.	Event.
Acute Bursitis,	Mich. Benson,	IV. P.	40	Aug. 8, 1869	Acute bursitis of elbow	Aug. 14, 1869	Recov'd.
Chronic Bursitis,	Margt. Mackay,	II.	16	Oct. 9, 1869	Chronic bursitis of knee	Oct. 27, 1869	”
	Edward Jones,	VI.	45	Jan. 16, 1868	Thickening of the bursa patellæ	Feb. 18, 1869	”
Bursal Swelling,	Name unknown	Glasgow	...	Aug. 8, 1869	Bursal swelling of the palm of hand and wrist	Sept. 2, 1869	”
Loose Cartilages in Joints,	Name unknown	Glasgow	...	June 28, 1868	Loose cartilage in knee-joints	July 1868	”
Synovitis,	Name unknown	L'pool	...	Apr. 14, 1869	Suppurative synovitis of the knee-joint	May 28, 1869	”
	Name unknown	London	...	June 22, 1868	Acute synovitis of the knee-joint	July 1, 1868	”
	Name unknown	L'pool	...	Nov. 30, 1868	Suppuration of knee-joint	Dec. 1868	”
Wounds of Joints,	James Dunbar,	R. W. B.	52	Aug. 10, 1867	Wound of knee-joint	Sept. 13, 1867	”
	Name unknown	Waiting Room	...	......	Fracture of metacarpal bone and wound of thumb	......	”

TABLE IV.—*Compound Dislocations.*

Name.	Ward.	Age.	No. of Case.	Date of Admission.	Disease.	Date of Dismissal.	Event.
No name,	IV.	...	56	Feb. 1870	Compound dislocation of the ankle	Mar. 1870	Recov'd.
No name,	...	...	57	......	” ” ”	......	”
No name,	Glasgow	...	58	......	” ” ”	......	”
No name,	Glasgow	60	59	......	” ” ”	......	”
No name,	Glasgow	...	60	......	” ” ”	......	”

TABLE V.—*Burns and Scalds.*

Name.	Ward.	Age.	No. of Case.	Date of Admission.	Disease.	Date of Dismissal.	Event.
J. Renwick,	IV. P.	33	66	Dec. 17, 1869	Burns of face, chest, and arms	Jan. 15, 1870	Recov'd.
No name,	Aberd'n	...	67	Nov. 1869	Burn of chest	Nov. 1869	”
No name,	...	...	68	......	Severe scald of forearm	......	”
No name,	...	...	69	......	Scald of breast and shoulder	......	”
W. Burnett,	IV. P.	24	70	Oct. 28, 1870	Burn of lower extremities	Jan. 30, 1871	”
Ann Gibson,	III.	36	71	Dec. 23, 1870	Burn of thighs, etc.	Feb. 1871	”

TABLE VI.—*Tumours of Mamma.*

Name.	Ward.	Age.	No. of case.	Date of Admission.	Disease.	Date of Dismissal.	E
Jane Malcolm,	II.	58	48	Jan. 17, 1871	Scirrhus of mamma	Feb. 1871	Re
Janet Square,	I.	26	47	Aug. 30, 1869	Adenoid tumour of right mamma	Sept. 17, 1869	
A. M'Naughton,	II.	38	50	Nov. 9, 1870	Scirrhus of mamma	Jan. 5, 1871	
M. M'Bain,	II.	64	51	Jan. 9, 1871	Scirrhus of mamma	Feb. 1871	
Eliz. Dick,	II.	68	52	Jan. 30, 1871	Recurrent scirrhus in cicatrix of mamma	Feb. 18, 1871	

TABLE VII.—*Tumours of the Superior Maxilla.*

Name.	Ward.	Age.	No. of case.	Date of Admission.	Disease.	Date of Dismissal.	Ev
Jessie Scott,	II.	35	62	Aug. 9, 1868	Tumour of superior maxilla	Aug. 29, 1868	Rec
Sarah M'Ilroy,	II.	40	63	Dec. 1, 1870	Malignant epulis of superior maxilla	Jan. 30, 1871	.
				Tumours of Inferior Maxilla.			
Ann M'Gee,	II.	31	64	Jan. 21, 1871	Myeloid tumour of inferior maxilla	Feb. 1871	Reco
No name,	Glasgow	...	65	Feb. 1869	Encephaloid tumour of inferior maxilla	Mar. 1869	„

TABLE VIII.—*Ligature of Arteries.*

Name.	Ward.	Age.	No. of case.	Date of Admission.	Disease.	Date of Dismissal.	Event
No name,	...	...	72	Jan. 1868	Aneurism of femoral artery	Feb. 1868	Recov'
Alex. Brown,	IV.	47	74	July 27, 1870	Diffuse popliteal aneurism	Sep. 1870	„
No name,	Liverp'l	...	75	Mar. 1869	Aneurism of carotid	Mar. 1869	„
No name,	...	...	76	Nov. 1868	Ligature of the left common carotid	Dec. 1868	„

TABLE IX.—*Miscellaneous Cases.*

Name.	Ward.	Age.	No. of case.	Date of Admission.	Disease.	Date of Dismissal.	Event.
Alex. Young,	V.	8	38	Oct. 28, 1868	Necrosis of tibia	Nov. 14, 1868	Recov'd.
No name,	...	...	36	...	Necrosis of frontal bone	...	„
Thomas Perkin,	R.W.B.	30	55	Sept. 9, 1870	Lacerated wound of thumb	Oct. 22, 1870	„
Robert Bayne,	IV.	18	61	Dec. 7, 1870	Badly united fracture of ulna, and dislocation of radius	Jan. 1871	„

ARTICLE V.—*On the Nature and Development of Cystic Tumours of the Breast.*

By JAMES F. GOODHART, M.B. Aberd., etc.; Pathological Assistant in the Hunterian Museum of the Royal College of Surgeons of England.

(*Read at a Meeting of the Sussex Medico-Chirurgical Society at Brighton, 1st February* 1872.)

IN many, if not in most, of our pathological collections, tumours of the breast, other than scirrhus, whether wholly solid, partly cystic, or cystic with endogenous dendritic growths, are, with few exceptions, catalogued under the heading Adenocele, or under one of the numerous equivalent titles suggested for it, such as chronic mammary tumour, and with which it is synonymous. One would infer from this that these tumours are a matter of almost everyday occurrence, and that they must constitute by far the larger proportion of what are usually accepted as innocent growths about the mamma.

DESCRIPTION OF PLATES.

PLATE I.—Figs. 1 and 2.—Papules from the wall of an intra-cystic growth in the breast.

The large rounded cells are shown with a large single nucleus.

a, *a*. Flattened cells of wall. No connective of any kind could be detected in these growths. Fresh specimen. Camera, 1 × 375.

Fig. 3.—Papules from an intra-cystic growth in the breast.

a, *a*. Two papules formed of rounded cells with distinct nucleus.

b, *b*. Cells have escaped, leaving stroma only of delicate fibrillæ.

c. Follicle formed between the two papules.

d, *d*. Cells heaping up on the surface. Fresh specimen. 1 × 375 Camera reduced.

PLATE II.—Section of wall from cystic breast.

a, *a*, *a*. Large papules formed by (?) gradual fusion of many smaller ones.

b, *b*. Epithelium.

c, *c*. Follicles formed by an approximation of the papules.

d, *d*. Cysts forming by an obliteration of the mouth of the follicle.

e, *e*. Small vessels cut across.

h, *h*. Membrana limitans, as plainly seen under 1 inch objective.

k. Stroma of connective, not filled in. Chromic acid prep. 1 inch objects.

PLATE III.—Fig. 1.—Section of tertiary papilla, from cystic disease of breast.

a, *a*. Stroma of papilla as seen under a low power. Its centre contained numerous cavities, and was much more rarified than the circumference.

β. Agglomeration of cells to form pseudo-limiting membrane upon which other papillæ, *γ*, *γ*, *γ*, have formed, and are already becoming converted into cysts.

Fig. 2. "Kyste lacunaire," formed by papillæ now fused above.

a, *a*. Elongated cells and connective, arranged in a linear manner, showing the external limit of the original papilla.

g. Limit of epithelium.

b, *b*. Cyst cavity.

c, *c*, *c*. Epithelium, composed of rounded cells, each of which is surrounded by a ring of connective fibres.

d, *d*. Connective of the papilla proper, showing it directly continuous with that running into the epithelial layer.

e, *e*. Extension of threads across the cyst cavity, showing how this is obliterated and a solid growth formed.

f. Perfect obliteration of cyst cavity. Chromic acid prep. Camera, 1 × 375.

Fig. 3. Lacunar cyst, forming secondary cysts by adhesion of its walls.

a, *a*. Stroma beneath epithelial lining.

b, *b*. Cysts formed in it.

Such an inference would, however, hardly be in accord with most recent pathological opinion and observation, which would seem to indicate that adenoid growths in the breast are an insignificant minority compared with sarcomatous, fibromatous, and myxomatous tumours, more especially the first of the three, which are much more common. I do not propose to quarrel with this distinction on the whole, founded, as it probably is, upon the examination of large numbers of cases; on the contrary, I believe it to be strictly correct, but only so far as the bare histology of the tumours carries us. No doubt, many of the growths examined in the breast are formed of young tissue, which, not so very long ago, would have been called fibro-cellular. But now, they have arrived at a further stage of vocabular differentiation, and are split up according to consistence, shape of cell element, and character of connective, into the various groups just named. A classification such as this, however, while adding a certain correctness of detail, is hardly an unmixed good, since it separates from each other growths which have at any rate certain rough features in common, and which, as far as their *true* nature is concerned, are probably not placed far outside their proper confines when looked upon in the light in which they have long been regarded as adenoceles.

The discussion of this subject thus embraces, it will be seen, two perfectly distinct questions, the microscopical characters of certain structures, and their proper position in any system of classification; in other words, their composition and nature. The former, simply one of fact, is easily decided by the examination of specimens; while the settlement of the latter can only be arrived at by inference after the consideration of their mode of development.

In regarding many of these tumours of the breast as glandular, I would not be understood to say that they are all formed of racemose gland structure; the term is applied here, as it is in our museums, to tumours having a foliated arrangement of their tissues, and which, in by far the greater number of instances, have cysts throughout them or in some part of their substance. The name "adenocele," thus interpreted, will include two histologically different forms of growth, the one tubular, like unto the breast itself, and the other made up of distinct acini in small proportion—which, indeed, may not be present at all—and in greater part of embryo gland-cells lying in the meshes of a delicate connective tissue; a growth, in fact, which, in strict pathological language, more nearly resembles the large round-celled sarcomata, Plate III. Fig. 2. Many cases, no doubt, are really made up of sarcomatous elements, and I only class the two forms together as practically one disease, from the study of their mode of production, which leads me to think that both are evolved in a similar manner. For this reason I shall venture here to describe them in common.

This distinction conceded, I have no hesitation in saying that tubular gland growth in the breast is decidedly rare, and what are often loosely called sections of tubes are not so at all, but are really sections of cysts in a young gland tumour, and the mode of formation of which I shall attempt to describe immediately. Whether these cysts be not an abortive formation of tubes and true breast tissue is another question—very probably they are.

I need not dwell long on the *rough* characters of these adenoceles; it will be sufficient to recall to mind, what is already well known to all who are familiar with pathological preparations, that a very large proportion of them are cystic; that all have a peculiar foliated or arborescent arrangement—said to be due to the clustering of cæcal acini round a main tube—and that nearly all when fresh are largely colloidal in their nature.

Their almost constant association with cysts is a point which will be dwelt upon hereafter in relation to their *raison d'être.* Of the small group uncomplicated with cysts—comprising the true adenoceles of recent authors—it may be said that the involuted type of the cystic form is still present in most of them, and I therefore think it fair to infer that the absence of cysts is in reality due to their obliteration by growth, or apposition of their surfaces through absence of secretion, rather than to the formation of tumour quite apart from cyst.

Starting now on the investigation of the minute structure of these growths, a primary or parent cyst may be, of course, formed in the gland by many modes, most commonly, however, we may suppose, by the blocking up of a duct and the formation of a retention cyst. Any one of the tubules of the gland may thus easily form a parent cyst which becomes filled with secretion. An examination of this shows it to be nearly always viscid and mucoid in its character, and composed in great part of fattily degenerating rounded cells, containing, if not obscured or broken up by granular changes, a single large nucleus.

If the wall of the cyst be examined, it will, even to the unaided eye, often appear velvety in look, sometimes all over, at others only in patches. A thin section made vertical to the surface of the cavity at one of these spots, and examined microscopically, shows a cellular lining attached to the parent wall, irregularly proliferating and heaping up into papillæ, at first of every variety of shape, but ultimately of very regularly truncated ovoid form. Some of these appearances are shown in Plate I., Figs. 1, 2, 3, and Plate II., and the papillæ may, in many cases, be perfectly well seen by the naked eye.

The epithelium of the walls of the cyst puts on every variety of form. It may be columnar or tesselated, or both together, the latter condition being very common; in which case the superficial cells are generally columnar, while the deeper ones are rounded. The most frequent of all, however, is the shape depicted in Plate I., Figs. 1, 2, 3. In rare cases, ciliated epithelium is found on the walls of the cyst. It is difficult to say what, if any, are the varieties of condition which determine this difference in form; I am almost disposed to think that it is in great measure dependent on pressure, amount of secretion, or closeness of connexion between neighbouring cells.

Pari passu with this heaping up of epithelium, delicate thread-like filaments shoot out from the wall of the cyst, and gland tissue beneath, between the cells on the surface. Thus, as the papule grows, it forms a connected whole, and this is further soon strengthened by the projection into it of a capillary loop from beneath. A rounding off of the papule appears to come about by the gradual flattening and elongation of the outermost cells, or those farthest from the original growth. Under a low power (1 inch), a very distinct limiting membrane is apparently present, but under higher objectives this cannot be made out, except in rare cases, and no obvious distinction can be detected between the outside compressed cells and the central well-shaped ones; moreover, in the majority of instances, the former do not form a continuous layer, but gaps are found all along at irregular intervals. However, membrane or no membrane, each papule becomes distinctly limited in its regularity of form by some restrictions, and its external boundary then allows of a secondary growth taking place from its surface, just as the papilla we have traced thus far did from the wall of the primary cyst or tube. This process may take place a second, a third, and, for ought I know or see reason for doubting, any number of times. Plate III., Fig. 1 is taken from a papilla in which this process had gone on for four generations. As also no distinct separation exists between the cells of the centre of each papilla and those of its circumference, so in like manner, as soon as the cells again heap up on its surface can no separation be defined between the new tissue and that of the parent wall on which it formed. A thin section of a growth at this stage shows a series of papules covered with epithelium, and forming follicles between them, such as is shown in Plate II.

Now, it is obvious that if these small masses of cells protrude evenly all over a cyst whose cavity is small, the papules may so press upon each other that a solid growth will result; other conditions will also tend to ensure this, such as an absence of secreting properties on the part of the cells, and a tight capsule, which would hinder the cyst from expanding. Moreover, the pressure to which the whole new growth is subjected would naturally be unfavourable to the surface-growth of new cells, and therefore, in many of these small solid (or true?) adenoceles, we have a true limiting membrane formed; according to others, this is the containing membrane of a gland acinus. This, however, is not a very frequent termination, the solid growths being in very small proportion; two other processes are, of the three, much the more probable. Of these, one will still produce a solid growth, the other a cystic one; the solid form is, however, truly a cystic one, and only becomes solid after the production of the cavities. In both cases, neighbouring papillæ, lined all round their exterior with gland-cells or epithelium, meet at one spot (Plate II., *d*, *d*). By their union, a space is formed with its walls, covered by cells, endued with the power of secretion. This cavity may now go on to one of three terminations: (1.) If it be small, the gland-cells may join across between the opposing surfaces and form, to all intents and purposes, a gland acinus, many of which, if they occurred, would cause the solidity of growth just now mentioned; (2.) If of fair size, papillæ of epithelium may again form in its interior on the type of its own formation, and thus give rise to fresh follicular pits and cysts, to growth within an intra-cystic growth; or, (3.) The epithelium may become fatty, and simply die off into the interior, and form much of the mucoid fluid, so commonly present in this class of tumours. These facts are, I think, a sufficient explanation of the difference between the solid and the cystic forms.

But there are other varieties of development which also require a notice. A cyst of good size having formed by the approximation of neighbouring papillæ, its walls may become pouched-in at various places towards its own cavity, by pressure of other growths and cysts outside it. In this way, many follicles are formed inside a single cyst, and these, by union of opposite walls and angles, may divide one large cavity into three, four, or five smaller ones, all still lined with cells, and able either to secrete or to grow. These are the "kystes lacunaires" of Continental authorities (Plate III., Fig. 3); and they present an appearance, when perfectly subdivided, not unlike the sections of tubes before mentioned.

Lastly, we have cysts formed by a process of softening within a papilla, the central part of which disappears, the walls becoming lined with epithelium like other cysts. Part of this process is shown in Plate III., Fig. 1; but it is, I think, better studied not in the breast but in allied tumours of the testicle, such as glandular enchondromata—if one may be allowed to use such a term. In these, the cartilaginous papules, almost as soon as formed, undergo this change, the cartilage cells first disappearing when the matrix becomes discoloured, and faintly fibrous in texture, and ultimately softened down by fatty changes; lastly, the cavity thus produced is lined by tesselated or columnar epithelium.

Now, there can be no doubt, I think, that the tumours here all described as glandular, would be set down by others as varying in their nature, if judged alone by their histological elements. MM. Cornil and Ranvier are most explicit in their statement that the adenomata "do not contain lacunar cysts, so that their presence, far from characterizing adenoma, completely excludes it."[1] They say that where these exist, solid growths outside have pouched into a *duct*, of which the epithelium undergoes proliferation, and the duct then dilates.

My reasons for dissenting from their interpretation of the facts are, that the epithelium in the spaces is not an ordinary duct epithelium regularly arranged; and that, in place of being separated off by a basement membrane, as it would be from a growth pushing the duct before it, it cannot be distinguished from subjacent layers, or by any very distinct characteristics, from the very centre of what would be, according to their view, the growth proper; further, that this very duct epithelium, if so it be, becomes speedily incorporated with the tissues beneath, by the shooting up into the layer of delicate filaments of connective.

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[1] Manuel d'Histologie Pathologique, p. 292.

In the fibrous and other forms these changes are difficult of recognition, and unless the specimen be perfectly fresh, it is impossible to make out much of the real nature of these growths. The hardening process to which they are submitted renders the surface-cells of the papules granular, and detaches them from the parent mass, which then appears as a naked papilla, with here and there fatty-looking debris attached to it. It may, however, even at this time, be seen that the most external part of the mass is more homogeneous, and formed of younger tissue, than that of its base; in some cases, where an apparently distinct basement membrane exists, this is stained more deeply by reagents than the rest of the papule, indicating rather that it is not a part of a primarily-formed and involuted membrane, but that it is younger in point of time than the subjacent tissues.

The papules here described have been, as has been said, very generally looked upon as follicles lined with epithelium. This is probably not a correct view of their nature, since a network of connective runs through them, and capillary loops ramify within and not over them. All things considered, therefore, I prefer to say that they are surface-growths, whose stroma is formed, perhaps round the capillaries, from the centre of each papilla towards its circumference, and that the lacunar cysts are in many cases certainly not dilated ducts, but are newly formed cysts, produced in the way that has just been described. From this it will be seen that any attempt at gland-growth is outside any pre-existing tissue, or rather is always on the free surface of older growths, whether this be truly outside such previous formation or upon the surface of a space within it. Repeating once again, that no matter what the nature of the growth, all are formed on the same plan by the development of papules, and all has been said that need be said on the mode of production of these tumours.

In the next place, it will be well to strengthen the position just taken up by referring to what has been made out in cystic disease of the ovary, in which organ many of the growths are, as is now well known, produced by the same heaping up of cells from the wall of a cavity, by the same production of papules covered by epithelium or glandular cells, and by the ultimate union of these papules to form cysts.

The same stages obtain in the case of the ovary as in that of the breast; but for fuller information as to this point in ovarian pathology, the reader is referred to a paper in the Medico-Chirurgical Transactions of 1864, by Dr Wilson Fox, who first showed the true nature of such growths. Dr Braxton Hicks also, towards the close of 1864 (Guy's Hospital Reports), pointed out the similarity which exists between ovary and breast in regard to growth. Dr Hicks, however, describes the papules found in the ovary as all becoming follicular by a softening down in their centres, and compares their development with that of adenocele, which, he says, is known to be formed in the same way. Herein, then, I differ from him in saying that, in the majority of cases, the follicles of the latter are not formed inside the papilla, but outside it, by the help of others; inside it the vessels run, and the septa of the growth are formed.

If, then, these cystic tumours in the ovary are glandular, as many of them are allowed to be, it is hard to see why the presence of cysts in the breast should preclude the possibility of the presence of gland structure, as MM. Cornil and Ranvier would have us believe.

Analogous formations are also met with in the lip, scalp, intestine, and some nasal polypi, as described by Billroth. Except in the latter case, it is also important to note that the tumours are usually solid and not cystic: the bearing of this upon the question of growth will be touched upon again shortly.

Now, in all these regions, one constant condition exists in the presence of cavities or tubes of gland structure. What, then, is the relation between tube and cyst, and what that between cyst and growth? Taking the latter part of the question first, we may refer to the fact, that one of the greatest obstacles to growth is continuous pressure; we may then not unfairly infer the exact converse of this, and say that one of the greatest incitements to growth is the existence of space in which to grow. This, indeed, is a physiological axiom, which hardly needs to be stated. Every one has noticed the behaviour of granulations on a free surface, or that of new growth towards natural cavities, such as the bladder or vagina. Surely the unrestrictedness of these is due to their freedom from surrounding hindrances; and though such instances can only be adduced as evidence of unlimited extension when once the process has commenced, still, what is favourable to a colony as a whole, must be favourable to a majority of the individnal units; and therefore it may be argued that cysts, constant as I believe them to be in the earlier stages of these tumours, act as incitements to growth. The fact that they always occur about gland tubes suggests how the space which is necessary is obtained. One can hardly imagine any condition more likely to be constantly affording temporary or permanent occlusions of ducts, and therefore cysts, than the ramifications of tubular glands and their terminal cæca. Mr Birkett[1] gives details of one case in which a dilated duct was traced, and a growth found on its wall. This, however, can rarely be done; and I have never seen this the first step, though, from the investigation of the later stages, I have no doubt of its occurrence. It is not, however, necessary for the argument that a duct should first become dilated, because any cyst, whether formed by or independently of a tube, if in the neighbourhood of gland, is likely to become lined with epithelium and take on a pseudo-secretive action, and so to produce growth; but, in saying this, I rather anticipate what follows.

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[1] Guy's Hospital Reports, 1855. Art. "Adenocele."

In thus thinking that there is a causal relation between space and growth, I differ from Dr Hicks, who, in the paper before mentioned, argues that, inasmuch as all such growths are not cystic, therefore the cysts cannot be an essential element with them, and probably the two are only accidentally associated. But I have already shown how, a primary cyst being formed allowing of growth, it may be quite possible to get this obliterated without the production of fresh spaces containing fluid. I have now only further to say, that these tumours are much more unlimited in organs such as the breast and ovary, where there is a presence of conditions which ensure secretion, and therefore the distension of any cysts that may be formed—and, as a consequence, where freedom of growth is allowed—than in those glands, such as the sebaceous, whose secretion is more inspissated, and which is not so well adapted for distending without obliterating an obstructed duct.

In saying thus much of the relation which possibly exists between cysts and new growths, any conception of the first beginnings of tumour has been carefully avoided. It would indeed be fatal to the extension and main purport of this short paper, if we were to carry away the idea that any conditions before mentioned could be of themselves sufficient to produce new growth; they are, after all, only extrinsic adjuvants, and hardly touch the question as to why it should originate. It is not that there is a space ready in which cell-proliferation may take place; something must be behind and within each cell, fitting it to take advantage of conditions ready to its hand—and as to the nature of this something, we now pass on to say a word.

First of all, then, the mere fact of the presence of gland implies, one may say, under favourable conditions, the probability of growth, in that glands are largely formed of embryo cells, which are somewhat removed from the restrictive developmental influence brought to bear upon other parts where new tissues are interwoven with the old.

Let me explain:—In an ordinary fibrous tissue, let us say, nuclei of young material, or engaged in forming young tissue, are scattered here and there, completely surrounded by more formed substances. These young germs are therefore naturally thrown, so to speak, into good society, and, in somewhat homely language, may be said to be well brought up. This is hardly so in a gland, where a number of germinal elements are thrown together, and are not so overpowered by the tissue around as to forbid an independent action. What wonder, then, if at times they act out of harmony with the parent stock, and live a life of their own? Thus much may be said of any gland, but I take it that there are additional reasons in the case of one such as we are now more especially concerned with. In this case, they are subject to periodical excitements—to times when they are, we may suppose, supplied with increased nutriment and augmented force, which, if it be not supplied with an outlet, will likely enough lead to mischief from a clinical point of view, and this mischief will, as I think, probably be new growth. Why this should be so is, in a measure at any rate, explained by a hypothesis which the development of these tumours warrants us in making, viz., *that growth and secretion are to be looked upon merely as a common force finding its expression in different ways.*

In the early history of gland life, the force which the part has supplied to it, in common with the other regions of the body, is registered in growth and development. At a particular period, again, in its existence,—partly, no doubt, owing to calls that are made upon it, and partly also to a tendency long inherited to take on a definite action at a definite time,—the gland leaves off growth and takes on the capability of secretion, and thus is provided an outlet for its energy. Supposing now that, in the full tide of this developmental activity and high nutrition, a part of its secreting surface becomes shut off, or knocked and excited when its dormant power and longing cannot find equilibrium in secretion, what more likely—if, indeed, it be not just what we should expect—than that it should go back to its prior formative processes, and commence again to grow? Is not this physiologically sound? At any rate, presumptive evidence in its favour is afforded by the fact that these tumours are most common in young unmarried or sterile women; in other words, in those in whom secretion is in a state of nascent activity. Give this no outlet, and new growth will very possibly result, but, more than this, growth of such a kind as shall be a fair index of developmental tone, and of an otherwise healthy state, viz., a fair substitution for healthy gland structure. The representation will not be a perfect one, because it is not now as it was prior to the time when the gland first became able to secrete, when with undivided aims it was wholly occupied in development; now it is partly occupied in forming gland and partly in holding itself in readiness for secretive action, and the developmental process, at any rate, is not furthered by this subdivision of labour.

Diverging for a moment from the limits imposed upon our subject by its title, let us carry this idea of correlation to the other pole of gland life, and work it out to its conclusion. We shall then be on the wane of gland activity, a period when secretion is somewhat rudely stopped, often after having been in active use for years. The organ still has to dispose of force, all the more, probably, in that it has become accustomed to action, and for which reason a large amount of blood still reaches it, and now, while the mould is still present, giving its rough characters to the mass, a something is wanting—developmental *tone*, as we in our ignorance have ventured to call it—which in earlier days might probably have sent it on its way as a simple glandular tumour: a feeble copy of the original is present, it is true, but the idea and spirit of the master-hand are absent. Now there is no cohesion between the constituent elements; there is an individual as opposed to an inter-dependent life, and each cell lives through its stages absorbed in its own immediate ends, influencing rather than influenced by the still healthy structures, and quite regardless of the wants or interests of the organism on which, like a parasite, it may be said to feed.

Still, physiologically, this abnormal growth is an outlet for force, and the correlative of former service. As such, it must be looked upon as a most unhappy attempt, as far as we can see, to remedy an evil.

Various objections to the theory of correlation between growth and secretion have been made, two of which it will be well just to notice here. *1st*, It is said that were the hypothesis a true one, many women at the end of the period of lactation would become the subjects of adenoceles, whereas the very opposite is notoriously the case. I cannot, however, think that this conclusion is a sound one; for, in the first place, at the termination of a long period of action, the gland itself may be said to be exhausted. In the second place, the whole amount of force throughout the system is obviously reduced, and every tissue in the body is making equal, if not greater, demands upon the common pabulum, from which alone the organ in question can derive its energy; while it may not unreasonably be supposed, that, by the time the whole body has regained its wonted status, the breast has returned to its state of nascent activity, in great measure habitual to it—to a state of *action*, in reality made manifest by its very quiescence.

2d, The theory of correlation would apply equally to cysts in all glands, and not to those in special ones only. This, however, is not so. In estimating the likelihood of a new growth occurring in any given cyst, these cavities may be divided into two grand classes—serous cysts, and mucous or glandular cysts; the one containing, as the names imply, a serous fluid, the other a colloidal or viscid matter in greater or less proportion. The former class, illustrated best by kidney cysts, never take on growth, but remain secretive all through their history; while the latter, though not always, by any means, giving rise to endogenous growth, are still at any time very likely so to do. In both these instances, cyst is common to them; gland influence and structure are in a measure common to them; secretion is common to them; and practically, both may be looked upon as excretive, so that in relation to ultimate ends, both would seem to be very similar in purpose. In what, then, do they differ? Only in this, that while the products of one are watery, those of the other are colloidal. I have no doubt that this is an essential point of divergence, but if so, it is only to give a result for the cause, if we go no further. What is the reason of this difference in the consistence of the products? It is to be found in this, I believe, that serous secretions are formed by membranes, or at any rate by glands which have close analogies with secreting membranes, while mucous fluids are formed by glands proper. If the analysis of the difference between gland and secreting membrane be carried yet further, it, I apprehend, resolves itself into a matter of difference in the amount of work done, and a difference in the number of working agents. To explain: A secreting membrane consists of basement layer and one or more layers of cells, while a gland is formed by a crowd of cells all huddled together in a bag or network. The more the workmen the more the work, or, expressing this in terms of secretion, the greater the number of cells secreting fluid, the greater number of cells will there be in that fluid; for secretion is, I take it, only a discharge of material, together with the bodies which obtained this from the blood or tissues. To pursue this line of thought only one step further; as has been said before, the more cells in any secretion, the more the likelihood of growth taking place.

In addition to this, it has been suggested that in their earlier stages gland cells have impressed upon them an errand of formation, and it is only when other forces come into play that this is converted into a secretive errand; they have, in fact, been bred up to growth, and to this they repair when functional life ceases. But in the case of membrane, this is not so; their elements were never formed for building up gland, and so they cannot revert to a craft of which they may be said to be utterly ignorant; they have no alternative action, and therefore cannot do otherwise than continue to secrete.[1]

But some one will say, "This connexion between growth and secretion is all very well if it can be supported by facts; but this is not so; you are obliged to admit that the majority of these tumours are not gland formations but something else." Now, while allowing that in their somewhat matured condition, a fibroma, sarcom, or myxoma in the breast, may be distinct enough in its nature; I am far from thinking that this is so in the earlier stages of its growth. A gland is further a compound structure, made up of gland cells, connective and fibrous tissue. If there is a growth of the cells, one would expect also an increase of the fibre, and this is what actually occurs. It, then, is quite possible that the growth of connective or fibre may be under more advantageous circumstances than those under which the cell elements exist; this being so, the former would increase at the expense of the gland tissue, the latter become crowded out, and the whole formation practically, as described, sarcomatous or otherwise. This is the more likely when we remember, that supposing, as we must in any part of this compound whole, a variety of tissues to be stimulated to growth, each element would hardly start fair in the race. In the one case, we have to do with cells whose life, as far as we can judge, is much shorter—if, indeed, what would be regarded as a degeneration in other structures be not their essential function—with elements that will rapidly proliferate and as quickly die, and this on the smallest exciting cause; in the other case, we have to do with a tissue less isolated in action, and therefore less prone to rapid change, and not so obnoxious to altered conditions. But to say this much is not to deny a glandular *nature* to many of these formations. This question of cell life is a fascinating one for unlimited speculation, more especially if pushed into the region of malignant and recurrent growth. Upon this time and space forbid our entering here. One may, however, before closing, just diverge for one moment to point out that these remarks, both in relation to innocent and cancerous tumours, seem to illustrate a pathological law, which teaches that if a growth occur in any part, it will, with but few exceptions, take on the form of such part in more or less perfect manner; and thus we find, in the case of the breast, a certain resemblance between cancer and other tumours. A very practical point is embodied in this, which, as every worker with the microscope in the field of morbid anatomy knows well, still needs reiteration. How often, to such a one's very great perplexity, morsels are sent to him, of which, perhaps, he knows nothing beyond the bitter fact that he is expected to express an opinion on the question of its recurrence. If our observer is wise, he will keep to a bare statement of description, and leave recurrence to futurity, which cannot fail him; but, unfortunately, such a barren announcement is generally very little consonant with the surgeon's hopes or fears; he cares little to be told that his knife has removed a lymphoma or rapidly-growing adenoma or what-not; he associates often gland tumour with innocence, and cancer with its surgical opposite; while the pathologist, as I say, knows well, that only in exceptional cases can it be said that such-

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[1] The distinction here drawn between gland and secreting membrane elicited some criticisms at the time of reading this paper as to its reality in fact. It would, I think, rather strengthen the theory brought forward did such a distinction not exist. This, however, is not so; for whether my reasons for making it be deemed satisfactory or not, we can hardly get over the pathological fact, that cysts, membranes, or glands—of which I quoted the kidney as a typical example—whose secretion is serous, are hardly ever liable to growth within their cavities. I can neither find recorded, nor have I seen in museums, a cystic kidney giving rise to papular growth from any of its surfaces, and the pathology of renal cysts is probably, therefore, simply one of tubular dilatation, and not one of new growth. The fact that the kidney is frequently the subject of cancer is hardly a case in point, seeing that there is no evidence of the growth commencing in the tubules, and it is equally probable that it may originate outside them in lymphatics or elsewhere.

and-such a growth is a *cancer*, while many most harmless-looking tumours rapidly recur. I am inclined to say for myself, that an answer to the question of recurrence is much more surely indicated by naked-eye appearances and experience, than by any histological inquiry.

Lastly, as to the light which these observations throw upon gland development, it may be remembered that I expressed a doubt whether these new formations were ever produced by the involution of a simple tube, while the formation of papillæ inside cavities is very general in what appear to be attempts at gland growth in many regions of the body. This uniformity of action in different parts cannot, I think, be a mere result of chance. Again, it seems very improbable that there should exist one developmental law for an early period of life, and another for adult age or senility, while no one, I suppose, now holds that new growths are omnipotent in their freedom from all law. Whatever, then, the name by which we characterize that force which ends in tumour, most will probably be ready to admit that it cannot be other than that same force which was impressed upon the one cell at its first beginning, and which sent it on its road of evolution; and we may, upon this, not unreasonably ground the assumption that the developmental processes gone through in the formation of glands in intra-uterine life, will be very closely imitated in extra-uterine formations; in other words, the clue to the nature of these pathological structures must be looked for in the field of normal embryology; and if so, then, by providing specimens easy of access, both by their numbers and size, morbid anatomy will, in its turn, react upon the latter, and facilitate a study at present surrounded by almost insuperable difficulties. This line of inquiry has indeed already made much progress through the able researches of Müller, Billroth, and others.

Part Second.

REVIEWS.

Annual Reports of the New York Asylum for Idiots.

Annual Reports of the Pennsylvania Training School for Idiotic and Feeble-minded Children, from 1856 *to* 1871.

Reports from the Massachusetts School for Idiotic and Feeble-minded Youth, from 1853 *to October* 1869.

Reports of the Connecticut School for Imbeciles, from 1862 *to* 1870.

Reports of the Private Institution of Feeble-minded Children, Barre, Mass., from 1866 *to* 1870.

Idiocy: Its Diagnosis and Treatment. By Dr E. SEGUIN. 1864.

Aphasia. By Dr H. B. WILBUR.

Final Report on the Experimental School, Massachusetts. Cambridge: 1852.

Report of the Commissioner in Idiocy to the General Assembly of Connecticut, 1856.

THROUGH the kindness of a friend in Toronto, we have now before us a large number of annual reports of training schools for idiots, imbeciles, and feeble-minded children from across the Atlantic. In no country in the world has the education of this unfortunate class been prosecuted with greater energy and success than in the United States. To say that a problem has been successfully worked in America, is a somewhat perilous way of recommending a trial of it in this country. But one thing we cannot deny,—that the United States have preceded us in recognising the duty of the State to give a proper amount of education to all the children of the country who may be in need of it. This principle has only recently been recognised in England; nor is it yet carried out in Scotland or in Ireland, though our legislators are at present busy with the subject. It is not surprising, therefore, that some states of the American Union have taken a much wider view of the duties of a government than we are yet prepared to carry out. Not only have they granted pecuniary aid to the schools for the blind and deaf, but a number of training schools for idiotic and imbecile children have been founded and maintained by the help of the State. The view upon which this aid is granted is clearly enunciated in many of the reports under review. Take the following, for example:—

"We have already referred to the principle adopted in the very infancy of our colonial existence,—that it is the duty of the State to require the education of *all* its children. Admitting this principle (and it would be difficult to deny it), and the conclusion follows legitimately, that it is the duty of the State to provide for the training of this unfortunate class, and that in such a way as that all may be liable to share alike in its advantages."[1]

In Great Britain, the care of the idiot has been left to the voluntary charity of the public; and, where the Government has interfered, it has not been to help those who have endeavoured to ameliorate the condition of this unfortunate class.

Under the Lunacy Act of 20th and 21st Victoria, idiots were included under the head of insane, and put under the charge of the Commissioners of Lunacy. In England, all those children sent for education to Earlswood and Lancaster, and other English institutions for the improvement and training of idiots, can only be admitted under the usual lunacy certificates, signed by two registered practitioners of medicine.

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[1] Report of the Commissioners to the General Assembly of Connecticut, p. 17.

As a general rule, the precautions necessary to take against lunatics are quite superfluous in the case of idiots or imbeciles. An idiot is unsound of mind very much in the same way as a child of two or three years old is of unsound mind; and to demand the usual formidable array of certificates and petitions before a feeble-minded child can be sent to a training school, is an outrage upon common sense and justice. It is an arbitrary regulation, which only tends to render the parents unwilling to send the most improvable cases to the only establishments where they can get a suitable training, and to thwart the noble efforts of the charitable founders and subscribers.

The Scotch Board of Lunacy have taken a more sensible view of the matter, and have not insisted upon anything beyond an application signed by the parent, and a notice of admission or description of the case from the medical officer. These institutions, which are better supported in England than in Scotland, are very far from being able to care for the large number of idiots in either country. Few people have got any idea of the number of idiots; and it is extremely difficult to get statistics, from the unwillingness of parents to return their children under such a heading. In the census of 1861, only 481 were returned as idiots or imbeciles in Scotland; but from evidence in the possession of Dr W. A. F. Browne, then Commissioner in Lunacy, 2236 had been, about the same time, actually visited by him, or by other medical men on whom he could rely. Dr Denis De Vitré, Chairman of the Royal Albert Asylum for Idiots at Lancaster, writing in 1871,[1] states that "the number of idiots and imbeciles in England has been appropriately estimated at 50,000, while the entire hospital accommodation yet provided is insufficient for 1000. In Ireland, the number of idiots by the census of 1851 was stated as 4906, or 1 to every 1336; the number of insane as 5074, or 1 in 1291 of the general population.

The above statistics of lunacy in Ireland are noteworthy, as the collectors have succeeded in getting something like a real return of the number of idiots; for there is no reason for believing this class more numerous in Ireland than in other countries. "No census," it is observed in the Report to the General Assembly at Connecticut (p. 76), "taken on the principle of the British or United States census, gives anything like full returns of this class, particularly of the younger imbeciles and idiots."

We are thus prepared for the conclusions of the Connecticut Commissioners:—

"We have thus presented the results of our investigations, and, we think, have demonstrated conclusively the duty of the State to aid in raising up these poor outcasts from the degradation of their present condition. When we consider that they are as numerous as the insane, eight times as numerous as the deaf and dumb, more than twice as many as the blind, that no other means are available for their improvement, and that, under these genial influences, they do attain to intelligence, usefulness, and manhood,—we feel that we have presented a claim on their behalf which an enlightened and liberal Legislature will not reject."

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[1] Dr De Vitré's calculation evidently does not include the Asylum for Idiots at Catherham, of which there is an account in *Good Words* for April 1872. He refers to the four English training schools.

Before granting public support to these institutions, the State legislatures acted with great caution. In Massachusetts an experimental school was tried for three years, the report of which is signed by Dr S. G. Howe, the author of a well-known work, "On the Causes of Idiocy;" and it was only on finding a real improvement in those subjected to training that permanent support was promised.

"Seven experimental schools, started under State patronage, have resulted in the establishment of as many public institutions, built and supported by these several states. In nearly every instance, these experimental schools have been located at the state capitals, where their modes of operation and their results could be conveniently scrutinized by the members of the legislative bodies upon whose favour they were dependent. They are, therefore, now the exponents of the intelligent convictions of the respective legislatures that founded them."[1]

The general plan seems to have been, that, on a given sum being raised by private charity, so much more was added by the legislature. The states which now maintain institutions of their own are, Massachusetts, New York, Pennsylvania, Connecticut, Ohio, Kentucky, and Illinois. Other states who have none of their own, send boarders to these institutions. In Canada there is none, though we are informed that it is contemplated to erect one at Toronto. In the annual reports of the American training schools, as well as the work of Seguin on Idiocy, published in America, a high degree of success is claimed; and it appears to us likely that State support should tend to render them more efficient, as well as more able to overtake the work before them.

In America, those cases who do not seem likely to profit by training, those labouring under decided ill health, as well as the insane and epileptic, are returned to their parents' homes. At the New York Asylum at Syracuse they are taken for a month, when a report is sent to their parents. Those who are maintained gratuitously are admitted in the precedence of their application, in consideration of their wants and capabilities, and not, as in Great Britain, by the votes of subscribers collected by personal solicitation. An ample staff of teachers is allowed, with salaries sufficiently large to induce them to stay in their situations.

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[1] Twentieth Annual Report of the New York Asylum for Idiots, 1871, p. 11.

The Annual Reports of Dr Wilbur, dating from 1852 to 1871, record, in an engaging style, the experience of a physician of ability and sound judgment, who has now devoted twenty years to the treatment and training of idiocy and the diseases which cause it.

The following quotations may be interesting to our readers:—"Idiocy, or that general mental condition which is commonly understood by that term, depends upon a defect or infirmity of some portion or the whole of the general nervous system, just as blindness or deafness depend upon some affection of the special nerves of sight or hearing; and just as complete and hopeless blindness and deafness will result when these special nerves are affected to a certain extent, so it is true that in certain conditions of the central nervous masses, the brain or spinal cord, there will result a degree of idiocy, or a form of idiocy, that, so far as any marked or permanent results are concerned, may be considered hopeless. In other words, the organic defect and the diseased condition cannot be remedied, and, therefore, the resulting mental deficiency cannot be obviated. The peculiar conditions, however, upon which the idiocy is based, are so beyond the reach of one's observation, are oftentimes so subtle in their character and pathological symptoms, that they can only be inferred (scarcely said to be proved) by a failure after a fair trial of the most approved means to obviate them."

Take, again, from the Seventh Annual Report:—"There is a class of children who are, in the early periods, of infirm or imperfect bodily organization. As a consequence, they are deficient in intellect: they are idiots, with all the absence of mental manifestations, and with the habits and tendencies of this state. During some of the critical periods of their childhood, or in the more radical change in the system from childhood to youth, the physical cause or infirmity underlying the idiocy is actually obviated or removed; but through the strength of confirmed habits, and from the fact that they are still surrounded with the same circumstances, they would continue in the same condition of mental inferiority. Exposed to the educational and elevating influences of a well-regulated institution, the effects produced seem almost like regeneration—the individual entirely emerges from the condition of idiocy."

In the First Report, Dr Wilbur states his view, that the most teachable age for idiots is "the proper school-attending age of ordinary childhood." As defined in subsequent reports, this is between seven and fourteen. "As such, they are free from the confirmed habits which constitute, in the main, the disagreeable or repugnant features of the common appreciation of idiocy. Their whole organization is more flexible, more susceptible of development. The physical defects or infirmities with which the idiocy is connected, or upon which it is dependent, are more amenable to proper rules of diet, regimen, or medicine."

Dr George Brown,[1] writing from a private institution, where the parents may be expected to allow the children to spend longer time in the establishment, remarks,—"The younger the pupil when entered, the better for him, and for us too."

Naturally enough, with pupils so young, there were no trades taught at Syracuse. The peculiar boast of the American training schools was, that they gave education in its broadest sense—the culture of all the human faculties, unembarrassed by the utilitarian views which in England make it such a peculiar object that the intelligence of the idiot should be directed to make him more or less supporting.

Of five teachers to ninety children at Syracuse, four were females.

In the Eighth Annual Report, Dr Wilbur remarks,—"Our general rule (the admission of pupils from seven to fourteen years of age) seems to be practically a just one. At all events, as it can be suspended, for proper reasons, in any individual case, by the action of the board of trustees, it can do no harm. Whenever, in the farther experience of the institution, it shall be deemed advisable to extend the limits of age in the reception of pupils, it can be done."

In the Twentieth Report, after enriching his experience by a visit to Europe, and after making some remarks upon what he observed at Earlswood, Dr Wilbur writes,—"Theoretically, the earlier in point of age deficient children are submitted to special training and instruction, the greater their prospect of ultimate benefit. Acting upon this, the mass of pupils selected were too young to be applied to any practical industry. Just when they had reached an age when they could be taught something useful, their terms of residence at the asylum would expire, and they be sent away to acquire elsewhere, and under less favourable circumstances, the real knowledge which they most needed. Thus, the ultimate end of all the educational efforts was made too remote for the observation and apprehension of the teachers."

In the regulations of the Pennsylvania Training School,[2] it is stated that the period of the greatest school improvement is generally from twelve to eighteen.

It was impossible but that the teaching of industrial occupations to idiots should not tend to their being admitted or retained to a later age. At Earlswood, a considerable number of the inmates are grown men and women. Both at Earlswood and Colchester life cases are elected. Idiots neither learn to speak nor to walk so soon as ordinary children; nor, as a general rule, are they able at so early an age to commence to work. It seems to us that, as a general rule, those from eight to fourteen receive more readily a scholastic education, whereas those above fourteen are much more able to learn to work; and some idiots can be taught to work very tolerably who cannot learn the alphabet, whereas others can be taught to read a little who are never apt at work. If the children can be kept long enough to give them both a scholastic and industrial training, so much the better.

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[1] Report of Private Institution, Barre, Mass., 1866.

[2] Sixteenth Annual Report, p. 26. Philadelphia, 1869.

We fear, in trying to give due honour to Dr Wilbur's reports, that we have so taken up our space as to leave no room for doing justice to the claims of the other reports and papers at the head of our review; indeed, each of them is well entitled to a separate notice. The reports of Dr S. G. Howe and Dr Edward Jarvis, of the Massachusetts School, are very interesting and instructive reading. We do not know anything better of its kind than the Twentieth Annual Report by Dr Jarvis.

Those of Dr Isaac Kerlin, of the Pennsylvania Training School, are written with great ability and warmth of feeling. Dr Kerlin has a kindly word to say in favour of epileptic idiots, which are excluded from the gratuitous benefits of almost all training institutions. Out of 111 of this class, he claims 16 cured and 57 improved.

A striking feature in the American reports is the number of pupils who have become self-sustaining. This is, no doubt, an easier problem to solve in America than in Great Britain. In the New World there is a much greater demand for bodily labour, especially in agriculture, and land is cheap and easy to be had. It is generally recognised that there is more chance of idiots and imbeciles learning to make their bread by such labour than by any other. Several of those who have been cared for by Dr George Brown in the Private Institution for the Education of Feeble-minded Children, Barre, Mass., "are now," he writes, "filling stations of usefulness and respectability in life, having served in the army and navy during the war, are managing small farms, or maintaining themselves by some mechanical trade."[1] "Of 500 individuals," writes Dr Kerlin,[2] "received and trained at this institution, 81 are capable of earning their own support in domestic service, farming, or certain shop employments, under influences of favourable protection, such as have been named."

In Dr H. M. Knight's able and interesting report of the Connecticut School,[3] 7 pupils are deemed capable of self-support, and 3 of these were reported as actually self-supporting; 2 children were also sent to enter a public school.

The same want of space compels us to pass over the instructive pamphlet of Dr Seguin on Idiocy, its Diagnosis and Treatment, which came before his larger work on Idiocy. His other pamphlet, published in 1870, has been already reviewed in this Journal.

The article of Dr Wilbur upon Aphasia is of a thoughtful and suggestive character. Idiotic mutism is a subject which has been little noticed, but which presents some features well worthy of study.

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[1] See Report, Barre, 1866, p. 14.

[2] Eighteenth Report, p. 9.

[3] Hartford, 1870, p. 7.

A Manual of Zoology, for the Use of Students. By HENRY ALLEYNE NICHOLSON, M.D., D.Sc., etc. Second edition, revised. Blackwood and Sons.

THE first edition of this work was noticed so recently in our pages that a lengthened review of it at present is unnecessary.

Suffice it to say that the second edition differs from the first chiefly in this, that it is larger. That this is an advantage we are inclined to doubt.

As in the first, so in the second edition, that portion of the work which is devoted to the lower forms of animal life seems somehow to recall to memory the notes of a song which at one time fell pleasantly on our ear within the walls of the Edinburgh University. The notes themselves have died away, but the echo is returned from the pages now before us.

The fact that within twelve months a second edition has been called for must be a source of satisfaction to the author, inasmuch as it shows that his labour has not been in vain. At the same time we would humbly suggest that, in the event of a third edition being demanded, a little less of detail and more of principle might be found advantageous.

Notes on Comparative Anatomy: A Syllabus of a Course of Lectures delivered at St Thomas's Hospital. By WILLIAM MILLER ORD, M.B. Lond., M.R.C.P., etc. London: J. and A. Churchill.

THIS syllabus contains the substance of the author's course of lectures on comparative anatomy. It will form a good guide to the student, in so far as it directs his attention to the leading anatomical peculiarities of the different forms of animal life. The essential anatomical characteristics of these groups in relation to the various functional systems, are given clearly and well. As an outline it is excellent; the details, however, the reader must fill in for himself.

The Notes, we have no doubt, will be largely made use of in these days of "cram," when it seems essential to the progress in life of the student, and more particularly of the medical student, to "get up" the largest amount of knowledge in the shortest space of time, regardless of any higher consideration than that of passing an examination. As a syllabus of a course of lectures, the Notes are unexceptionable, but we doubt the propriety of publishing these in the form of a book, which in the hands of those for the use of whom it is designed, will but tend to encourage an ever-increasing evil,—that of "cram." Let the student make such an abstract for himself, and we may rest assured that he will have attained a much more satisfactory grasp of the subject than can ever be gained by committing, parrot-like, to memory the contents, excellent though they be, of a work like that now before us.

On the Temperature in Diseases. By C. A. WUNDERLICH, M.D., etc. Translated by W. BATHURST WOODMAN, M.D.

A Biennial Retrospect of Medicine and Surgery for 1869–70. Edited by Mr H. POWER, Dr SHEPHERD, Mr WAREN TAY, Mr R. B. CARTER, Dr BARNES, and Dr T. STEVENSON.

Lectures on Clinical Medicine. By A. TROUSSEAU, M.D., etc. Translated by Sir JOHN ROSE CORMACK, Kt., M.D. Ed. and Paris, F.R.S.E., etc.

Atlas of Portraits of Diseases of the Skin. Eleventh Fasciculus.

THE above-mentioned works constitute the thirteenth annual issue to its subscribers of the New Sydenham Society, and though relating to different subjects, we have classed them together, because it seems of more importance to the profession that they should know the very valuable practical information they can secure for one guinea, than that at this time of day they should be treated to an elaborate critique on Trousseau's Clinical Medicine, or on Wunderlich's Treatise on Thermometry; the worth of these volumes being well known to all but the merest tyro in medicine. As to the Biennial Retrospect, it is as good as any of its class: of little value to town practitioners possessing easy access to large, well-selected, and well-catalogued libraries, it is no doubt of great value to country practitioners, whose resources in that respect are more limited, and whose requirements are of some consequence, if we estimate them by the numerous works of the kind intended to supply them. The fasciculus of Skin Diseases supplies life-size portraits of Pityriasis Rubra, Papular Syphilis, with Indurated Chancres, and Pruriginous Impetigo following Varicella, which are extremely beautiful, and look life-like, but which, to our mind, would have their value very much enhanced by the addition of a printed sheet containing a concise history of the case; these might at first be issued in loose sheets, and subsequently re-issued in fasciculi, when a sufficient number had been printed. The additional expense thus entailed, might be amply provided for by the issue of only two plates instead of three; while, as the practical value of the plates would be very greatly enhanced, and as the atlas alone is worth all the money subscribed, not only would no subscriptions be likely to be lost by this alteration, but many, we think, might be attracted by it.

To return to Wunderlich's Thermometry, it is well to recollect that this contains not only observations on the temperature in disease, but also in health, and is a complete epitome as to the history of the subject up to date. It is no infallible guide either to diagnosis or treatment, but is nevertheless a work of reference, absolutely necessary for all who would keep themselves abreast of the day, in relation to so important a matter as corporeal temperature.

The importance of Trousseau's Clinical Lectures is too well known to require insistance upon here, and the only parts to which we desire to refer, are those in which he speaks of the food of infants and of their weaning, because in both of these we think he is somewhat in error. He states that a nursing infant, of four or five months old, ought to take about 15,000 grammes (nearly 20 oz., or one pint) in the twenty-four hours; but scarcely any infant of only one month old will be satisfied with only one pint of milk; many will take a quart, and the average lies between; while, of course, the quantity required at four or five months must be considerably increased. In children actually nursing, a knowledge of the amount required is of little importance, because they help themselves to satiety, without the use of a measuring glass; and if found not to thrive, they have their wants supplemented by food, or by the provision of a more efficient nurse. In those brought up by the hand, it is far otherwise; and if to an inefficient supply of *average* cow's milk—not the milk of one cow, but the mixture of several, as our author very properly recommends—we add one-third of water (p. 153), we still further reduce the poor infant's nourishment, and ought not to wonder that rickets and all the many ailments which follow defective nutrition result. It is quite as easy to bring up a child healthily on the bottle as by a nurse, if he be sufficiently fed; but it is much more easy to starve him the one way than the other; hence the great mortality amongst bottle-babies. Again, Trousseau very properly states, that the most serious difficulties of nutrition arise at the cutting of the eye-teeth—not because that is a difficult matter, because they are so sharp that it is not; but because they have to force their way in a closed space between two teeth—and he proposes to defer weaning till after that period, that is, on an average, till the child is eighteen months old. But long before this average period, the milk of an average nurse is too watery to be of any nutritive value, and is much better replaced by food of a more nutritious character, while any delay beyond the average in dentition is far more probably due to deficient nutriment than to any other cause, and is most efficiently to be met by prompt weaning, and the supply of more nourishing food. Under all circumstances, the food of the child ought to be proportioned to his requirements, and not regulated by any theoretical ideas; and the requirements of the child ought to be judged of according to his development, and not deduced merely from his age; and the absurdity of having recourse to averages, in this or any other question, is very well shown by Trousseau pointing out, in regard to dentition, that amongst all the boys who furnished an average of seven months as the period of eruption of the first tooth, in not one single case did the first tooth appear at this age; while, amongst the girls, the average age of six months applied only to one-fourth of the facts. An average is only an abstraction, representing a fact intermediate between two extremes, which itself may only seldom or perhaps never occur. It is absurd, therefore, to attempt to base accuracy of knowledge upon a system of averages, or to ask, in regard to any question, formulated truths from statistics which they cannot furnish.

We cordially recommend the New Sydenham Society, and its valuable publications, to the favourable consideration of our readers.

A Handbook of Therapeutics. By SIDNEY RINGER, M.D., etc. Second edition. London: H. K. Lewis: 1871. Pp. 483.

Dr Pereira's Elements of Materia Medica and Therapeutics. Edited by ROBERT BENTLEY, M.R.C.S., F.L.S., etc.; and THEOPHILUS REDWOOD, Ph.D., F.C.S., etc. London: Longmans, Green, and Co.: 1872. Pp. 1093.

THESE two works are typical of the past and of the coming times. Because a practitioner has to employ drugs in the cure of disease, it is absurd to expect him to possess a minute knowledge of their natural history and chemistry; he might as well, as Huxley has said, be expected "to belong to the Iron and Steel Institute, and know all about steel because he uses knives." Fancy an inquiry into Bessemer's process forming an integral portion of a medical examination; but would this really be more absurd than to make the fitness of a student to treat disease to hinge upon his knowledge of what a schizocarp is, or how "ethers, aldehydes, and acids are derived from the first four homologues of the alcohol $C^2H^4O^2$."

In recent attempts to simplify therapeutics, and present to the student the physiological action of the drug apart from its natural history and chemical constitution, Dr Ringer, so far as published works are concerned, has the field before him. As might naturally be expected, there is an infinite variety in the value of his separate articles; some of them, such as that on Chiretta, p. 418, are bald to the very extreme of inanity, and had better have been entirely omitted; while in all, we think, the total exclusion of all reference to the natural history is a blot, which ought in subsequent editions to be remedied. It is surely a matter of interest and of polite learning to know what ergot or turpentine is, and from what plants they are derived, and it must conduce to our influence with our patients to be able to state concisely, if asked, what the drug is which we propose to employ, though it would as certainly be a waste of time for us to get up its minute botanical and chemical history, while such facts would be not more unintelligible than useless to them.[1] In various of the articles, we note that Dr Ringer has not brought his information quite up to date; for instance, under the head of Ergot, the subcutaneous injection of ergotine, which has proved itself so energetic as a hæmostatic, is not even alluded to, and the employment of electricity as a therapeutic agent is also entirely omitted. Nevertheless, the fact that Dr Ringer's work has reached its second edition in so short a period, conclusively shows that it fulfils a want which has been felt, and one which we feel assured, from the well-known care and accuracy of the author, it will fulfil with even more acceptance in future editions, which will no doubt be called for.

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[1] Since this was written, a gouty old gentleman has illustrated the appositeness of this remark, by his vainglorious chuckling over a former medical attendant in regard to want of knowledge of the botanical source of Veratria and its distinction from Veratrum.

We should, however, like to impress on Dr Ringer the great advantage of using an alphabetical arrangement for his articles; it is as absurd as it is confusing to find Aconite following Ipecacuanha, especially in a work which has only therapeutical ends in view, and which has no hankering after botanical or chemical mysteries. We speak feelingly on this subject from long acquaintance with Sir Robert Christison's Dispensatory, which, for this very alphabetical reason, is so easy to consult.

Dr Pereira's Elements are here presented to the student in a novel dress, Messrs Bentley and Redwood having very carefully brought up the botanical and chemical portion to the standard of the present day. In this respect it presents a most excellent example of a kind of work which, in so far as it is intended for the medical student, will soon, we trust, be only looked upon as interesting from an antiquarian point of view, and the circulation of which it will be hopeless even to attempt to increase by tagging on to a series of instructive and interesting botanical and chemical essays detached therapeutical memoranda, especially when those are in themselves essentially antiquarian. What can be said for a work professing to teach the therapeutics of the present day, which not only ignores the hæmostatic use of ergotine, but which recommends that ergot should be employed to assist the dilatation of the os uteri (p. 392), or which recommends low diet, repeated bloodletting, and digitalis to reduce hypertrophy of the heart? Such statements betray such utter ignorance of the action of these drugs, that it is quite unnecessary for us to give further proofs—which might easily be done—that the therapeutical department of this work is very far behind the others, and is quite unworthy of the companionship in which it is found.

A Guide to the Examination of the Urine. By J. WICKHAM LEGG, M.D., etc. Third edition. London: H. K. Lewis: 1872. Pp. 96.

The Urine and its Derangements, etc. By GEORGE HARLEY, M.D., F.R.S., etc. London: J. and A. Churchill: 1872. Pp. 376.

WE have already recommended Dr Legg's little work to all clinical clerks, as a concise manual of all the matter needful for them to attend to. This third edition is somewhat enlarged, and in it there have been adopted several of the improvements we formerly suggested. A more enlarged experience, and more careful reflection, will no doubt modify some of those improvements still more in accordance with our views, and will also prove the needfulness of those other improvements which we formerly pointed out. At present it is fairly accurate for so concise a manual.

In Dr Harley's work we have a volume of more pretension. Though by no means perfectly accurate, it is yet by far the most readable, instructive, and interesting manual on the subject issued, since Golding Bird took the medical world by storm. The New Sydenham Society's translation of Neubauer and Vogel's work is unquestionably the most accurate and scientific work on the urine in the English language; but it is dry and unreadable compared with this, which has also the great advantage of containing all the information upon any given subject continuously in one place, which is a great saving of trouble to the student. It is clearly printed, on slightly toned paper, and the illustrations, though not numerous, are characteristic, and are carefully and distinctly drawn. The chapter on the Clinical Significance and Treatment of Urohæmatin, and of the abnormal pigments found in the urine, seems to us specially worthy of consideration.

A Text-Book of Pathological Histology: An Introduction to the Study of Pathological Anatomy. By EDWARD RINDFLEISCH, Professor of Pathological Anatomy in Bonn. Translated from the Second German Edition by W. C. KLOMAN, M.D., and F. T. MILES, M.D., etc. Philadelphia: Lindsay and Blakiston. London: Trübner and Co.: 1872. Pp. 695.

RINDFLEISCH'S work is too well known and too much esteemed to need any commendation from us. The second edition has been done into moderately readable English by the translators, who nevertheless deserve the thanks of all who are unable to peruse it in the original. Originating, as the author tells us it did, more at the microscope than at the writing-table, it would, of course, be comparatively valueless unless profusely illustrated, and the 208 woodcuts which adorn its pages will be found to supplement clearly and distinctly the author's description. Pathological histology is, if possible, of even greater importance to the student of medicine than normal histology; for while the latter gives us the microscopic or ultimate structure of normal tissue, the former shows us how the coarse pathological changes of these tissues, such as enlargements, diminutions, softenings, indurations, etc., are founded in certain changes of these ultimate elements; it explains the one by the other. Nay, more, it sometimes goes a step farther, and gives us a lesson in therapeutics, which, if earlier learned, might have spared much controversy, and may even yet convey instruction to some controversialists who still survive. It has been a favourite doctrine with some, that heat and moisture are useful in inflammation by favouring cell-growth ; but modern pathology teaches us that the application of heat of a proper degree increases the amœba-like movements of the wandering cells, tends to diffuse them through a greater space, and thus favours their return to the circulation through the lymphatics, thereby promoting the resolution of an inflammation. It is only when applied in excess that heat ceases to have this dispersing power, acts as an irritant, renews the process of emigration, increases its intensity, and favours suppuration (p. 107). It is premature, however, to expect much therapeutic information from pathological histology, a branch of science which as yet is only in its infancy, having been founded by Rokitansky and Virchow within our own time, while the researches of Cohnheim and others, which have entirely revolutionized our views regarding it, and made even those of Virchow obsolete in some respects, are but of yesterday. It is works like the present which make us feel our own backward position in having no pathological institute in which similar practical observations could be made, and our vast pathological material utilized, not only for instruction, but for the advancement of science; and it is such works also that make us feel the absurdity of muddling the brains of our students with valueless botanical and chemical minutiæ, while fields so rich in promise for the future lie waste and uncultivated: it is not so much medical examination as medical education that wants to be remodelled. We cordially recommend this valuable work to our readers, and especially to our younger readers, as one that will repay their careful study.

Part Third.

MEETINGS OF SOCIETIES.

OBSTETRICAL SOCIETY OF EDINBURGH.

SESSION XXXI.—MEETING VIII.

13th March 1872.—Prof. SIMPSON, *Vice-president*, in the Chair.

I. *Prof. Simpson* exhibited A FIVE AND A HALF MONTHS' FŒTUS, that had been thrown off by a patient labouring under a severe attack of smallpox The pustules were distinctly seen all over the fœtus, especially on its back. With regard to the time a dead fœtus is retained *in utero*, Prof. Simpson stated that three weeks generally suffices for expelling it; the membranes and placenta first undergo a fatty degeneration, and then they act as a foreign body, exciting uterine contractions.

II. *Prof. Simpson* showed A FŒTUS WITH THREE LEGS, resembling the impression on an Isle of Man penny. Attached to the placenta was a small piece of a second cord.

III. *Dr Young* stated that a little more than a year ago he showed the Society an umbilical cord which was only ten inches in length. He had attended the same patient a few days since during her second confinement, and this time the cord was eleven inches long.

IV. *Dr Pattison* mentioned a case of SEVERE HÆMORRHAGE that had lately occurred in his practice. He was sent for suddenly to attend a lady, whom he found to be losing an enormous quantity of blood. On examining her he could not detect blood coming from the os uteri. She had only been married three days, and it was not her menstrual period. The hæmorrhage was arrested by full doses of the pernitrate of iron and the application of cold to the vulvæ.

V. CASE OF PELVIC CELLULITIS FOLLOWED BY PERITONITIS.

BY DR JAMES YOUNG.

In the following case some remarkable changes occurred during the progress of, and subsequent to, the primary inflammatory action which ultimately caused the patient's death. Many, I presume, will allow that one of the most troublesome obstetrical accidents which are apt to occur is miscarriage, and also that hæmorrhage is frequently a cause of most anxious care and solicitude. One of the most dangerous consequences of such an accident is inflammation, which frequently occurs, and which, in this case, proved the cause of the patient's death. The patient is generally found suffering from hæmorrhage, with the placenta left in the uterus. Mrs ——, æt. 32, was born in Edinburgh, of healthy parents, who lived to an advanced age. She had had six children and several miscarriages during her married life of fifteen years. Mrs —— was greatly alarmed by fire on the 20th November last, when ten weeks pregnant. Hæmorrhage came on, and continued three weeks, more or less, until the 8th December, when the fœtus was expelled. A medical man was sent for, and attended for a week, after which a change was recommended to the country. While there, considerable hæmorrhage continued for two weeks, requiring tonics and the liberal administration of wine. Notwithstanding the treatment and rest, the hæmorrhage continued until she returned to town, on the 2d January last. I saw her on the 3d, and found her very weak, pale, and anæmic. I examined the uterus, and thought there were indications of some placental remnant, which was expelled during the night. The hæmorrhage ceased on the 5th January. She had little, if any, pain until the 7th, when she had a severe rigor—pulse 120, and weak, with diarrhœa. She complained of severe pain in the region of the uterus. Some days thereafter, Prof. Simpson visited her, and confirmed my opinion that the case was one of pelvic cellulitis. A blister was applied above Poupart's ligament, on the right side, and occasional mild purgatives were given; also milk, beef-tea, and moderate doses of brandy. On the 12th the pain was very great, and, on examination, I discovered an abscess of considerable size forming between the uterus and rectum. I ordered warm-water injections and sponge-peline fomentations over the pubic region, hoping that the abscess might discharge itself per rectum or per vaginam. On the 15th, I opened it with the trocar and canula, and removed a saucerful of putrid and most offensive pus. I ordered vaginal injections to be continued, and on the 16th Mrs —— was greatly relieved, which was indicated by her countenance. On the 17th, her reply to my interrogation was, "Very well." I prescribed iced champagne, with beef-tea, milk, and white of eggs. To my great dismay she complained of considerable pain over the abdomen on the 19th, and, on examination, I discovered the whole belly to be tympanitic, with tenderness on touch, all over. There had been no fresh rigor, which made the extension of the inflammation all the more unaccountable.. Turpentine stupes were immediately ordered to be applied at frequent intervals, with small doses of opium, and a due amount of nourishment. Bowels to be gently relieved. On the 20th, the pulse rose to 130. Hiccup came on, and vomiting, the stomach showing the signs of irritability usual in such cases; and the patient died on the 21st January.

I am indebted to my friend Dr Charles Bell for a copy of his excellent treatise, entitled "Constitution of Women, as illustrated by Abdominal Cellulitis," and I find, on perusal, that the connexion between cellulitis and peritonitis is admirably brought out,—see page 24. Dr Bell, at page 26, says, "It is also a striking characteristic of this disease that it is liable to have sudden and alarming exacerbations, which are attended by an increase of pain and fever, indicating those occasional attacks of peritonitis, which, if not attended to, may prove fatal." Dr Bell also, at page 44, refers to occasional attacks of cellulitis coming on after uterine operations, but at that time had only met with two such cases. I have seen several annoying instances where perimetritis followed the use of sponge-tents and pessaries.

Prof. Simpson recommended that these abscesses be always opened early for fear of their rupturing. The difficulty is to determine whether it is a peritonitic or cellulitic abscess.

VI. CASE OF ACUTE YELLOW ATROPHY OF THE LIVER. BY DR M'DOUGALL, COLDINGHAM. READ BY PROFESSOR SIMPSON.

Mrs Wood, aged 30, a strong muscular woman, the mother of five children, was, on the 5th September, after an easy natural labour, delivered of a weakly male child. The placenta was united by firm adhesions to the uterus for one half of its extent; small abscesses were detected scattered over its surface, together with other alterations in its structure, indicating inflammation of its substance. Before her confinement, she complained for upwards of two months of a feeling of languor, disinclination to work, inability to lie on right side, becoming livid in face, loss of appetite, intermittent jaundice, occasional vomiting, costive bowels, and dyspeptic symptoms. These symptoms she attributed to her pregnant condition, and hence did not seek for medical advice. Four days after her confinement she rose and went about her ordinary household duties, and for a week after felt stronger than she had done for some months.

I ceased attendance on the 12th, and did not see her again until the 25th, when I found her confined to bed, and was very much struck by the extreme pallor of her countenance. The conjunctivæ were jaundiced, as also the neck, chest, and arms; the lower part of the body was almost entirely free from yellow discoloration. The jaundice was most marked on the right side. The lochial discharge was of a dark venous character, and occasionally excessive. The tongue was moist, furred in centre, red at tip and edges; there was great thirst; pain in epigastric region after food, and feeling of nausea; bowels costive. Pulse 120, small and weak, but regular; respirations 30, temperature 101°. Skin moist, covered with clammy perspiration; sweating at night, principally confined to the roots of the hair, and most complained of when awakening from sleep. Copious flow of milk, and patient continues to nurse her child. Urine scanty, and high-coloured, sp. gr. 1025, contained slight trace of albumen, bile pigment, and a few scales of urea; marked loss of flesh.

The physical examination of the chest revealed a condition of incipient phthisis, manifested by increased depression under both clavicles anteriorly; harsh inspiration; prolonged harsh blowing expiration, most distinct under right clavicle posteriorly. Along with the above alterations of the respiratory sounds, slight crepitation was heard at the right apex; cardiac sounds were feeble, with a faint blowing systolic murmur heard at the base.

Abdomen.—The right hypochondriac, epigastric, and one third of the left hypochondriac regions were occupied by an enlargement, smooth on its surface, and extremely tender on palpation and percussion. The lower border, which extended almost to the umbilicus, slanted upwards, and was intolerant of the slightest pressure. This hepatic enlargement measured 6½ inches vertically in the right mammary line, and was proportionally increased in the axillary and median lines. The *spleen* was also considerably enlarged. To have six leeches applied to the epigastric region, followed by fomentations, and a calomel purge.

26*th.*—The leeches having bled freely, she felt considerably relieved, and enjoyed four hours' refreshing sleep. The liver, still enlarged, is slightly more tolerant of manipulation. The bowels were four times moved after the purgative; the stools were light-coloured, and were of an insupportably fetid odour. She complained of nausea, and has vomited during the night a large quantity of gray clay-like mucous fluid; the jaundice is more distinct; the lower part of the body still continues free; a clammy moisture covers the whole body. The urine passed was found to contain albumen, casts, epithelial cells, bile pigment, blood globules, and, on adding nitric acid, a few crystals of urea; pulse 120; respirations 32; temperature 100°. Muriatic acid prescribed.

It is unnecessary to recount her condition day by day; suffice it to say, that she continued without manifesting any new symptom, save progressive weakness, until the 6th October, when the hepatic enlargement was found to measure 7 inches in the mammary line, and distinct fluctuation was discovered over a circumscribed area of 3 inches; the pain over its surface was much more acute, increased not only by examination, but also by swallowing food. Frequent vomiting of dark-brown masses; petechial spots are found scattered over the upper part of the body and right leg; the perspirations continue profuse; the countenance is extremely anxious, indicative of suffering, and of a pale yellowish hue; the jaundice has now extended to the lower part of the body. She complains of severe frontal headache, and shooting pains in the shoulders, hips, and knee-joints; the bowels continue costive; the urine is of a light ale colour, depositing a very copious white precipitate, which, examined under the microscope, was found to be composed of oil globules and granular matter, a few tube-casts, and epithelial cells. The tongue dry and furred; pulse 130; temperature 103°; respirations 35. Muriatic acid to be continued, and large doses of quinine; purgatives.

7th Oct.—Passed an extremely restless night; bowels moved; stools dark-coloured; vaginal discharge much more abundant, and comes away in gushes when she is moved in bed; the hepatic tenderness continues extreme; the pain is so intense, that the least attempt at percussion causes her to cry out (more especially in the middle line to the umbilicus, and from the end of the sternum along the lower border of the ribs). A doughy feeling is discovered on palpation, extending to 2½ inches in the vertical direction, and 3 inches transversely; fluctuation not so distinct; no vomiting, but severe pain and nausea on taking food; perspiration still continues; pulse 108; temperature 100°. A pint and a half of dark smoky urine was passed during the night, which, on cooling, deposited a very abundant sediment, consisting of albumen, blood-cells, epithelial cells, tube-casts, crystals of uric acid, and urate of ammonia. The petechial spots are more diffused over the body. The pulmonary symptoms continue to increase in gravity; moist sounds are discovered under both clavicles, with increased vocal resonance, and dulness on percussion.

11th.—For the last four days her condition has varied little; the only additional symptom being a feeling of drowsiness, and occasional delirium; she lies for hours in a dozing state, but does not sleep; can bear percussion of hepatic region somewhat better; the dulness now extends to only 4 inches in the vertical direction; slight expectoration of blood; epistaxis; lips anæmic, with a few hæmorrhagic spots; the breathing is very much laboured, and she complains of suffocative sensations coming on at intervals; an incessant tickling cough causes her considerable annoyance; the jaundice is a little more decided, and the hæmorrhagic spots are somewhat more numerous; the pulse has varied in frequency since last report from 98 to 110, it now being 140, and becoming smaller; the temperature since the 7th has not risen above 104°, or been lower than 100°; the urine, light-coloured, contains no albumen or urea; it deposits a very copious sediment, so abundant as to render the urine of the consistence of pea-soup; two drachms were evaporated, and found, under the microscope, to be almost entirely composed of tyrosine and leucine.

14th.—The vomiting of dark gray, grumous matter has, for the last twenty-four hours, been so frequent that no internal remedies have been administered. The bowels, notwithstanding the use of strong purgatives, have not been moved for three days. She lies on the left side, and dreads the least movement of her body, as it causes the most excruciating pain in the right hypochondriac region. The jaundice has in great measure passed off, and is replaced by a ghastly pallor. The lips are covered with hæmorrhagic crusts; the petechial spots are scattered over the whole body; both legs are œdematous, and covered with dark-coloured bullæ; the skin is bedewed with moisture; night-dress wet with perspiration. She remains for hours in a state of apathy. The hepatic dulness only measures 1½ inch in the vertical direction. The urine is sometimes passed unconsciously, is darker coloured, and deposits on cooling a greenish-yellow sediment, wholly composed of leucine and tyrosine. Pulse 160, jerking and irregular; respirations 50; temperature 105°.

15th.—Semi-comatose; muttering delirium; excruciating pain in back, subject to paroxysmal aggravation. During the severity of the attacks she is with difficulty confined to bed. Incessant vomiting of tar-like matter; bowels moved, stools of dark colour, intermixed with clots of blood; copious epistaxis occurred twice during the night; urine not passed for eighteen hours; a pint and a half was drawn off, of a dark amber colour; on standing a greenish-yellow sediment was thrown down, found to consist of bile pigment, and numerous crystals of leucine and tyrosine. Pulse 170, small, thready, and intermittent; respirations 56, extremely laboured; temperature 106°. On percussing the hepatic region, it was impossible to discover any dulness.

16th.—Remained unconscious during the greater part of the night; the condition of stupor interrupted by moans and piercing screams; pupils widely dilated, but sensitive to light; convulsive movements set in about 4 A.M., and recurred at regular intervals till 8 A.M.; epistaxis and menorrhagia (so severe as to require the local application of astringents and plugging) set in two hours before death, leaving her completely blanched, with sighing, breathing, small quick pulse (180 was counted); temperature, half an hour before death, reached 109·4°; urine and stools passed involuntarily; the skin moist with perspiration; the whole body was covered with petechial spots; at certain parts a large quantity of blood was extravasated under the integument; the right leg was more œdematous than the left. Died comatose at 9 A.M., death being preceded by severe convulsions. No post-mortem examination was allowed. About six ounces of urine were drawn off after death, and contained bile pigment and crystals of leucine and tyrosine in great abundance.

Although I had not the satisfaction of the corroborative evidence supplied by an autopsy, I think there can be no doubt as to the nature of the disease from which this patient suffered, and under which she ultimately succumbed. The symptoms generally considered diagnostic of acute yellow atrophy were strikingly developed in this case, viz., jaundice, numerous hæmorrhages, hepatic atrophy, and the presence of leucine and tyrosine in the urine. I must confess that, during the preliminary stage of hypertrophy, I was very undecided in my opinion; and, indeed, for some time was quite unable satisfactorily to explain her condition. The stage of hypertrophy was peculiarly puzzling, more especially as in no case of acute yellow atrophy that I have been able to peruse, is it distinctly stated that inflammatory enlargement has been observed to precede the condition of atrophy. The points which, in this case, appear to be deserving of special notice are the following:—

1st. *The Prolonged Preliminary Stage.*—It appears likely that the disease had begun two months before confinement.

2d. *The Marked Hepatic Enlargement*—measuring at one time fully seven inches in the vertical direction. This enlargement was also attended with very distinct fluctuation, leading at one time to suspect the existence of abscess. It is just possible that hypertrophy may in all cases precede the atrophy, but, in consequence of not being sufficiently early brought under examination, may have eluded detection. Such, I am aware, was the opinion of the late Dr Bright; and if it is allowable to form an opinion from one case, I feel very much inclined to agree with him. The sequence of events which suggested themselves to my mind as occurring in this case were as follows:—Absorption of poison from within or from without—most probably from the diseased placenta—leading to toxæmia, and manifesting itself by typhoid symptoms, the special hepatic, splenic, and renal affections being secondary results. The hepatic changes might be compared to the lungs in pneumonia—condensation and enlargement, softening, rapid absorption.

3d. *Non-detection of Leucine and Tyrosine until Hepatic Atrophy sets in.*—The long continuance of jaundice, together with febrile symptoms, made me suspect acute yellow atrophy, and led me to examine the urine for those substances before symptoms of hepatic atrophy had manifested themselves; but I was unable to discover their existence until the 11th October, when diminution of hepatic dulness indicated the commencement of atrophy. This circumstance would lead one to conclude that there is some connexion between the absorption of the hepatic substance and the formation of leucine and tyrosine.

4th. The Increase of Febrile Symptoms coincident with the Occurrence of Atrophy.—The disintegration of the hepatic cellules, and their absorption into the blood, may have been the main cause of the increase of these febrile symptoms.

5th. The profuse perspirations, which were more abundant towards the close, seem to indicate an effort to get rid of some blood-poison.

Professor Simpson remarked that this disease occurs more frequently in women than in men, and that it especially attacks pregnant women. He had only seen one case of it in a female who was not pregnant, and in that case the symptoms were not well marked. In many cases it is known that the atrophy comes on at once; the preliminary hypertrophy in Dr M'Dougall's case he considered very peculiar.

Dr Fraser had had under his care a very interesting case, which was seen on several occasions by the late Sir James Simpson, who diagnosed acute yellow atrophy of the liver. At first the liver was supposed to be enlarged, and afterwards it seemed to get very small. On post-mortem examination, however, the liver was found to be of the normal size, yellow, and very fatty; the duodenum at its upper part was slightly inflamed. The patient was ill for two months, the principal symptoms being diarrhœa and vomiting. Throughout her illness her tongue remained clean, and her appetite good. There was no jaundice, and the urine did not at any time contain bile.

Part Fourth.

PERISCOPE.

Edible Snails.—The ancients had a decided taste for shell-fish; the Romans were great lovers of oysters; with us, the sea-urchins of Liguria enjoy a certain reputation; finally, snails were admitted to the best-furnished tables, if we are to credit the discovery of different alimentary remains made among the Gallo-Roman subterraneous buildings brought to light in the Cathedral of Troyes, where snail-shells and oyster-shells were found in company. The taste of the ancients for molluscs is with the moderns transformed into a true passion, which renders insufficient the resources of natural production, and would have led to the destruction of the species preferred, if the art of man had not attempted their artificial reproduction, education, and domestication, so to speak. At present the oyster and the mussel are cultivated on the seashore, whilst in the interior snails are collected and fattened to satisfy the increasing demand for them.

The snail is as much sought after in the south as in the north; the inhabitants of Provence have a marked preference for the "terrasan" (*Helix melanostoma*), and for the "naticoid" snail, a species with delicate flesh eaten in Spain and in Italy. The Parisians have for some years shown a marked liking for snails; the Belgians and Swiss also consume them largely.

But if the snail is eaten to some extent everywhere, it is to be acknowledged that Champagne is its true native country. There the snail is a national production, as its name of "oyster of Champagne" testifies: the production of the snail for all Champagne, and its preparation for the town of Troyes, constitute a monopoly of which it would not be easy to deprive them. Troyes has the reputation of preparing in a superior way its snails and its pork, as Strasbourg is famous for its *pâtés de foie gras*, Dijon for its gingerbread, and Aï for its sparkling wine; and these reputations, confirmed by a hundred thousand experienced palates, are really well merited.

The superiority of Troyes is so well known and so far spread, that the "traiteurs" of that town, who make the preparation of snails a speciality, export their productions prepared, ready to be put on the fire, not only to all France, but also to foreign countries; moreover, no stranger passing through Troyes in winter ever leaves the town without having tasted at least a dozen of our land-oysters.

The edible snail (*escargot*) is found exclusively on calcareous ground, carbonate of lime being indispensable to it to form its shell. This species constitutes a numerous group, all varieties of which, without being very formidable, are, however, the sworn enemies of our crops, and especially of the productions of our flower and kitchen gardens. Among the numerous species of snail nourished by the soil of Champagne only one is allowed the honour of appearing at our tables; it is the vine-snail (*Helix pomatia*), one of the varieties least hurtful to the crops. It is easily recognised by its shell of dirty white colour, veined with red; it possesses a firm white flesh, and surpasses in size all other kinds in the locality. This snail is to be met with especially in the meadows and brushwoods, in the neighbourhood of rivers and brooks, in the vineyards and in the argillo-calcareous cultivated lands, when a thick crop has preserved in a high degree the natural freshness of soils of this kind. The eatable snail has in the Aube given rise to an important trade, having its principal centres of production in the vicinity of Troyes and in the district of Arcis. The environs of Troyes contribute to the supplies of the town, the trade there being an ancient one. The production in the district of Arcis, which is of later origin, furnishes supplies for exportation, principally for Paris. This commerce, the result of a free trade, has its seat in the least-favoured parts of the country, from which almost fabulous quantities of our "oysters of Champagne" are sent in large cartloads towards the Eastern Railway, destined for the central markets of Paris.—J. BENOIT, in *La Santé Publique.*

[The eating of snails is not confined to France; snails with horse-radish sauce, "schnecken mit kern," form a winter delicacy in Vienna, and are systematically cultivated in the neighbourhood.—M.]

CURES FOR CORYZA.—Dr C. Barbier recommends in this disease that the patient should, if possible, not sneeze at all; if he must sneeze, he must do so with his mouth open, so as not to irritate the nostrils by the gust of air forcibly expelled through them, and also by the removal of the secretion with which they are filled; the patient must, for similar reasons, blow his nose as little as possible, but content himself with drying up the superfluous secretion as gently as possible; and lastly, he must forcibly inhale through the nostrils, a very small pinch of the following powder three or four times a day:—

℞ Argenti nitratis, partem unam;
Sacchara albi, partes novem. Misce optime.

This is said to cure the worst coryza in a couple of days; but its effects are said to be far exceeded by the following prescription, supplied by Dr Zarkowski of Schinznach, three or four inhalations of which taken into each nostril, at intervals of three or four minutes at the very commencement of a coryza, are said to remove it at once, and to prevent all further disagreeable results:—

℞ Extracti opii, gr. 1·5432;
Aquæ distillatæ, gr. 462·96. Solve.

According to the metrical system, the proportion is 10 centigrammes of opium to 30 grammes of water; that is, a trifle less than 1 grain to the ounce. A little of this solution is to be poured into the palm of each hand, and forcibly inhaled into each nostril, the head being at the same time gently thrown back, so that the fluid may pass backwards into the mouth. This is to be repeated as above directed, when all the symptoms will be found to be relieved, *tuto, cito, et jucunde.—Lyon Medical.*

ON THE ACTION OF CHLORAL HYDRAT.—From a review of the third edition of Liebreich's work on this valuable remedy, published last year, we learn that he still bases the action of chloral upon its ultimate conversion into chloroform by the alkalies in the blood, and that in this edition he has worked out this theory with greater scientific precision. Further, he details a case in which an ordinary dose of chloral produced in a gouty patient only violent excitement, and could only be got to act hypnotically after the patient had been for eight days treated with full doses of the bicarbonate of soda. This he ascribes to the highly acid character of the blood in such a case, or, at least, to its defective alkalinity, in consequence of the copious excretion of urate of soda. And he also supports his theory of the action of chloral, by a reference to the readiness with which hypnotism is excited in typhus fever by very small doses, and symptoms of intoxication by only ordinary doses, in consequence of the hyperalkalinity of the blood in such cases. He relates numerous experiments on animals confirmatory of the antagonism between chloral and strychnine, which he was the first to point out; and also expresses a sure hope, based on experimental research, that ere long chloral may be safely employed as an anæsthetic in surgical operations, his experiments having conclusively proved that a very wide difference exists between a fatal dose and one sufficient to produce complete anæsthesia; all that remains to be discovered is therefore the true anæsthetic dose for man. The diseases in which Liebreich has found chloral most useful are senile wakefulness, acute mania, delirium tremens, nervous asthma, chorea, the convulsions of teething children, and sea-sickness. This work, which is published by Müller of Berlin, concludes with a copious reference to all papers on the subject published up to the end of July 1871. —*Berliner Klinische Wochenschrift*, No. 9, 1872.

ON SUBCUTANEOUS INJECTION OF ERGOTINE IN VARIX.—Dr Paul Vogt of Greifswald has recently followed up Langenbeck's experiments on the cure of aneurism by the subcutaneous injection of ergotine, by employing it in varix of the veins of the leg, a disease which surgery has hitherto been only able to palliate. Dr Vogt has made use of this treatment in one case—that of a man aged 60, who for years had laboured under extensive varices of the right leg. A piece of varicose vein, about 2¼ inches long, and the thickness of the little finger, running across the tibia, was marked out by caustic, and about two grains of ergotine injected subcutaneously over its central termination, and this injection was repeated every second day. Within eight days this varix had completely disappeared; and even after six weeks' going about in an ordinary manner, no trace of it could either be seen or felt. A second varix, the size of a hazel-nut, lying on the outer side of the calf, was also made to disappear by a single subcutaneous injection of ergotine. In this case, a hard circumscribed tumour remained for some time over the spot where the injection had been made, but neither inflammation nor gangrene resulted, and the swelling gradually disappeared, without having given rise to any pain of importance. The solution employed was one of 2 grammes (30 grs.), in equal parts (7·5 grammes—nearly 2 drs. each) of glycerine and spirits of wine.—*Berliner Klinische Wochenschrift*, No. 10, 1872.

"It is, in truth, as important to the welfare of the patient as of the physician, that the mind of the latter should not be taxed and jaded by excess of work. The weariness of a long day, brought to the bedside of a patient, always impairs, more or less, what the highest professional skill and zeal can minister to his relief. The power of discrimination is lost or lessened, and practice passes too often into a hurried routine, unsatisfactory to the physician, profitless to the patient. This fact, fully confirmed to me by experience, requires neither explanation nor comment. It expresses simply what is the natural and necessary limit of mental power, and the wisdom as well as moral rectitude of acquiescing in it. The physician in full practice, like the lawyer in similar case, pleads the impossibility of contracting his work. There may be loss and difficulty in doing it, but with a strenous intention and a wise regard to the future, it can always be done." . . . . . .
"It—the regulation of life and habits—is a principle of practice often rendered inapplicable by patients themselves; many of whom are better pleased with a bald Latin prescription and the contents of phials and pill-boxes, than with the more simple methods of a well-regulated and wholesome life."—SIR HENRY HOLLAND'S *Recollections of Past Life.*

Part Fifth.

MEDICAL NEWS.

A MEDICAL CONGRESS is to be held at Lyons on the 18th of September next, and seven following days, Sunday the 22d being held as a *dies non*, unless business be brought forward of sufficient importance to necessitate a meeting on that day. The questions proposed for discussion are—I. *Epidemics of Variola*, with the means of arresting them, including an inquiry into the value of different forms of vaccination, and the various police measures which ought to be recommended. II. *Wounds by Firearms*, including the effects of modern projectiles upon the living tissues, the question of explosive balls, and the comparative value of expectancy, amputation, and resection in diaphysal and articular fractures, in regard to mortality and preservation of functions, also the best means of dressing wounds to prevent complications and permit of transport. III. *Ambulances in War-time*, including a comparison between those of different nations, their relations to the military commander, and the difference between a regular and a volunteer service. IV. *On Rinderpest*, comparing it with other epidemics and epizootics, describing the means of its propagation, the best means of arresting its progress, and the sanitary legislation in regard to it in the different countries of Europe. V. *The causes of the Depopulation of France, and the best means of remedying it*, with the object of showing how best to increase the birth-rate, and to diminish infant mortality. VI. *The Treatment of Syphilis*, chiefly in reference to the use of mercury, in all its pros and cons; also as to the use of mineral, especially sulphurous, waters in such cases. VII. *The Reorganization of the Teaching of Medicine and Pharmacy in France.* VIII. *The most practicable means of Ameliorating the Position of the Medical man, and of harmonizing it with the importance of the social duties he is called upon to discharge*, bearing mainly upon the suppression of quackery, and the more equitable regulation of his relation to mutual benefit societies.

Foreign medical men, who are exempt from any pecuniary subscription, ought to intimate their proposed attendance to M. le Docteur Drou, 5 Rue Pizay, à Lyon; and those who intend reading papers on the questions proposed, or on others which they may desire to bring forward, ought to intimate their intention to the secretary, on or before the 10th of September next. One day will be set aside for each question, essays on which will first be read, the discussion will then follow, and after that, if the time permit, independent papers will be read. The time allotted for each essay will be limited; and though the discussions will be public, only members of the Congress will be permitted to take part in the proceedings.

DARWINISM TESTED BY RECENT RESEARCHES IN LANGUAGE.—A paper was read on the above subject at the Victoria Institute, London, on 18th March, by Dr Bateman of Norwich, of which the following is a brief abstract:—The lecturer began by remarking that no works in modern times had exercised so great an influence for good or for evil as the "Origin of Species" and the "Descent of Man," and that no more suitable arena could be selected for discussing Darwinism than the Victoria Institute. Although announcing himself as a decided opponent of Darwinism, he stated his intention of treating the subject fairly, observing that he had no *a priori* objection to raise against it, and that he should not reject it from any fancied notion that its adoption was derogatory to our dignity, or inconsistent with Man's position in the order of nature; he was even prepared to admit that the descent of Man from an ape might not be inconsistent with *natural* religion, but he maintained it was directly opposed to *revealed* religion, which tells us that "God formed man of the dust of the ground, and breathed into his nostrils the breath of life, and man became a living soul." After a brief review of the main features and general purport of the "Descent of Man," and having called attention to Mr Darwin's statement that the difference in mind between Man and the higher animals was one of *degree only, and not of kind*, the lecturer stated that the object of his paper was to show that Man does possess a distinctive attribute, of which not a trace can be found in the ape and lower animals—an attribute of such a nature as to create an immeasurable gulf between the two. This attribute he asserted to be the faculty of Articulate Language, which he maintained to be the difference of *kind* which Mr Darwin was in search of. After stating what he understood by the term language, he proceeded to discuss the question as to whether language was the exclusive prerogative of Man; and having shown there was no analogy between the pantomimic and other forms of expression peculiar to animals and the articulate speech of Man, he asserted that language was our Rubicon, and no brute would dare to pass it. He then entered fully into the question of the Seat of Speech, observing that as the remarkable similarity between the brain of Man and that of the ape could not be disputed, if the seat of human speech could be positively traced to any particular part of the brain, the evolutionist might then say, that although the ape could not speak he possessed the *germs* of that faculty, and that in subsequent generations, by the process of evolution, the speech-centre would become more developed, and the ape would speak—in fact, would become a Man! He showed that none of the various theories as to the seat of language would stand the test of an impartial scrutiny, and he mentioned instances where persons could talk when the presumed seat of speech was invaded by an enormous tumour, completely disorganized by disease, or destroyed by a pistol-shot! With these facts before him, he asked whether speech, like the soul, might not be an attribute the comprehension of which was beyond the limits of our finite minds. . Having disclaimed all preconceived hostility to Mr Darwin, he (Dr Bateman) concluded by saying, that if the scalpel of the anatomist had failed to discover a *material* locus habitandi for Man's proud prerogative, the faculty of articulate language—if science had failed to trace speech to a *material centre*, had failed thus to connect matter with mind,—he submitted that speech was the barrier between Man and animals, establishing between them a difference not only of *degree* but of *kind;* whilst the Darwinian analogy between the brain of Man and that of his reputed ancestor (the ape) lost all its force, and the common belief in the Mosaic account of the origin of Man was strengthened. The lecture was illustrated by diagrams.

A LADY doctor who has resigned the profession gives the result of her experience to the New York *Evening Mail:* "If the girls were to know my experience," she says, "not one in ten thousand of them would ever attempt to 'be a doctor;' for I have studied medicine and some branches of surgery, graduated with honour seven years ago, practised for five years, and was successful, so far as restoring my patients and building up a large practice may be considered success; but as for collecting bills and getting fees proportionate to the time and services rendered, I was no more successful than most young practitioners. And though I am now healthy and strong, I could not compete with young men in the medical profession because of inability to bear over-work, and exposure to bad weather, night air, etc. Men who take reasonable care of their health are always well enough to visit a patient; but this is not true of women until they are nearly fifty years old, and never will be true of them, at an earlier stage, while the human race continues. Having almost killed myself, and known two other lady physicians to quite kill themselves by attending to a large medical practice, I have already given up the profession two years since, and will never resume it." The writer thinks even the forlorn hope of authorship preferable to the lancet.

OBITUARY.—WILLIAM HENDERSON, M.D. Ed., F.R.C.P.E., for twenty-seven years Professor of General Pathology in the University of Edinburgh, died there on the 1st ult., after suffering from aneurism of the aorta for rather more than three years, the earlier symptoms of which dated from a long anterior period. Dr Henderson graduated in 1831, and, at an unusually early period of life, was appointed Physician, first to the Fever Hospital, and afterwards to the general wards of the Royal Infirmary, while, before his appointment as Professor, he taught the practice of medicine as an extra-mural lecturer to very large classes, in a most thorough and acceptable manner. An accurate observer, and a clear and forcible thinker, when his judgment was not warped by the acceptance of views in therapeutics at variance with those of his professional brethren, and which time, and the progress of medical science, have more and more conclusively shown to be at variance with medical truth, he early signalized himself by his contributions to medical diagnosis, in a series of clinical studies, on the Diseases of the Heart and Larger Bloodvessels, published in the *Edinburgh Medical and Surgical Journal*, during the years 1835 and 1837. In these he entered somewhat minutely into the signs and symptoms of substernal aneurism, and was the first to point out the occasional occurrence of the murmur of efflux, and to explain its mode of production. He also was the first to point out that unusual delay of the radial pulse was an invariable accompaniment of aortic regurgitation, and an important means of diagnosis in this affection. Rightly to estimate the importance of these observations, it is hardly necessary to throw ourselves backwards into the dim light of those days. Less than two years ago, one of the most distinguished of our modern physicians—now, alas! no more—published a case in a contemporary, in which all the phenomena of a case of aortic regurgitation were reversed, because the cardiac impulse alternated with the pulse, and was therefore believed to be diastolic. While Stokes, therefore, yet believed, and Corrigan had only recently renounced the belief in the ordinary diastolic character of the apex beat, we may readily conceive that no small amount of self-reliance was required to propound the doctrine, that the pulse was naturally posterior to the apex beat, and that unusual delay was a symptom of disease; while the accuracy of the observation has only been confirmed by the advances in our knowledge, made during the thirty-five years that have elapsed since then. Dr Henderson was also the first to point out that typhus and relapsing fevers were two distinct diseases, and not merely asthenic and sthenic types of the same, as was then believed; and the accuracy of this observation has also been subsequently confirmed, and has in no small degree assisted in overthrowing the arguments brought forward in favour of a change of type in disease, and in placing its treatment on a surer basis. In conjunction with Dr John Reid, he also published various observations, which aided in bringing about the recognition of enteric fever as a separate disease—a fact which the labours of Sir William Jenner have since done so much to establish. Besides his early and accurate use of the stethoscope, Dr Henderson also made use of the microscope at a very early period, especially in relation to the pathological histology—as it is now fashionable to term it—of the lung in pneumonia, and of molluscum contagiosum.

In 1842, Dr Henderson was appointed to the chair of General Pathology, as successor to Dr John Thomson; and being already possessed of a reputation second to none for his accuracy of observation and power of diagnosis, he bade fair to attain an eminence in his profession which would have gratified his utmost ambition. Unfortunately, four or five years after this, he became entangled in the sophistries of Homœopathy, and a career, whose early brilliance was so full of hopeful promise, was for ever lost to science. In his new career, Dr Henderson was not unsuccessful, and many excuses might be found for his defection from the ranks of our profession; with the views we hold, however, we believe the kindest thing we can do, is to draw a veil over his later years, and conclude this short notice by expressing our sincere regret, that so talented, so genial, and so lovable a man, should have been led astray by so miserable an *ignis fatuus* as Hahnemannism.

THE DRAINAGE OF SCARBOROUGH.—We have received from Dr Taylor, the medical officer of health, a Report from the Special Sanitary Commission, and one from Mr Bazalgette, the eminent engineer. These evince a most praiseworthy desire for the sanitary improvement of the town, though they certainly do not show that its sanitary arrangements have hitherto been perfect. With our own frightful mortality from causes hitherto regarded as preventible, we are certainly not prepared to throw stones at our neighbours, but rather to suggest the propriety of our civic authorities setting our own house in order, by taking a hint from the Scarborough reports.

SMALLPOX.—During March the epidemic continued as fatal in Edinburgh as formerly; during April, however, it has been somewhat abating, and in the week ending 13th April, the deaths were only seventeen, against twenty during the previous week.

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ORIGINAL COMMUNICATIONS.

ARTICLE I.—*Some of the Medico-Legal Relations of Insanity to Will-making.* By ARTHUR MITCHELL, M.D., F.R.S.E., Commissioner in Lunacy for Scotland.

IN this paper the medico-legal relations of imbecility, or weak-mindedness, to will-making are discussed.

It is justly remarked by Ray that "no cases subjected to legal inquiry are more calculated to puzzle the understandings of courts and juries, to mock the wisdom of the learned, and baffle the acuteness of the shrewd, than those connected with questions of imbecility."

It is extremely difficult to say who the imbecile are. And even after we have come to some sort of agreement or understanding as to who they are, it is scarcely less difficult to determine to what immunities they are entitled, or what disabilities should be imposed on them.

Nor should the existence of these difficulties be a matter of surprise. For, if it be true that there exists every conceivable gradation between the utter mindlessness of deep idiocy and the majesty of the perfect mind, the region of imbecility, which lies midway, will almost certainly have indefinite and shifting boundaries; and being thus an intermediate state, we may confidently expect that it will sometimes be doubtful whether the incapacities and immunities of the one end, or the capacities and responsibilities of the other should be attached to it.

"It is impossible," Georget says, "to fix the limits which separate imbeciles from men endowed with faculties sufficient for understanding the whole breadth of their social obligations. Reason is modified and lost by insensible degrees; by an infinitude of steps we rise from the most complete idiocy to the most perfect development of the mental faculties."

Neither science nor law can remove these difficulties. They are inseparable from all questions which relate to mere imbecility.

A denial of them, in a positive and dogmative way, may safely be regarded as an evidence of ignorance, or of narrow and exclusive views. They are felt, indeed, by the most expert of experts as much as by any, and they are sure to be always, and freely, expressed by the really well informed.

We shall easily satisfy ourselves as to the accuracy of these opinions, if we make an effort to ascertain who the imbecile are, and to show how the law deals with them.

In attempting to determine who the imbecile are, I have to point out on the threshold, that imbecility and idiocy are practically associated as mere varieties of the same thing—imbecility representing the milder forms and degrees of idiocy. I am alluding now to the way in which medical men regard imbecility. It is with them just a mild form or degree of idiocy. This being the case, I need scarcely add that there exist persons whom one medical man would call idiots, and another imbeciles. Nay, more, it is within my knowledge that the same medical men, considering themselves very expert in such matters, have frequently called the same persons at one time idiots, and at another time imbeciles. Imbecility, therefore, in the tabular statements of medical men, is a mild degree of idiocy, and there is no sharp line separating the one state from the other.

They are both usually regarded as congenital states, but this is a mistake, for in a very large number of cases they date from infancy or childhood, and not from intra-uterine life. They are still, however, even when not strictly congenital, states of mental *privation*, rather than states of *deprivation*—of amentia rather than of dementia; for the reason that, as little mental progress or growth has been made, there is little to lose or be deprived of, when disease of the brain appears in infancy and leaves those permanent effects, which are often undistinguishable, both physically and psychically, from the effects of nutritional or developmental misfortunes occurring in uterine life.

It is of some importance not to lose sight of this view of imbecility, because it regulates the tabulation of cases in statistics prepared for medical purposes. It will be observed, that it rests not simply on a state of mind, but on a state of mind with a certain history or origin—that is, it makes imbecility not simply a want of mind, but a want of mind which dates from uterine life or from infancy.

But this history or origin is of no value whatever in a legal inquiry. We have to do, there, only with the state of the mind. If the mental powers are wanting, or are weak and feeble, it matters nothing how or when the want or the feebleness came, in a question, for instance, which concerns testamentary capacity. The existence of the feebleness and its extent are, in such a case, the points to be determined.

Accordingly, the imbecility of lawyers includes more than that of medical men, and the mildly demented are as much imbeciles in courts of law as the mildly amented. The imbeciles of medicine were always imbeciles, but the imbeciles of law may at one time have been strong-minded men. Nor does it matter whether the dementia—that is, the loss of mental power by those who once had it, or, in other words, the acquired imbecility—has followed mania, or fever, or drinking, or masturbation, or melancholia, or sunstroke, or a blow on the head, or anything else.

That there is nothing far wrong in the greater width which the law gives to imbecility, is proved by the fact that regarding many of the demented—those, namely, who have had normal minds rendered abnormal and feeble by disease—the most skilful of medical men cannot tell, from anything about the mental state, whether the condition does or does not date from uterine life or infancy, *so long as the patient's history is unrevealed.*

In both of these states—the congenital and the acquired imbecility—there is implied something more than the mere absence of knowledge, and it is of importance to remember this. There is implied in them the absence of a power to acquire or to possess knowledge, and it is this which gives to them the colour of a diseased condition. They exhibit, in other words, an ignorance which cannot be wholly overcome.

There is, however, one state of mind which is treated by the law as a state of imbecility, of which this is not entirely true. I refer to the mental condition of childhood, on which the immunities and incapacities of imbecility are conferred, though there is no evidence of any inability to acquire knowledge. On the contrary, every day is then giving evidence of the reverse. In the case of children, the law *appears* to confer the incapacities of imbecility on the mere absence of knowledge; but a sound view underlies this procedure of the law, for it is properly assumed that, though the power to acquire knowledge exists and grows as it is exercised, there has not been sufficient time given to the operation of the power to make it possible for the child to have acquired or to possess what is involved in testamentary capacity. We have here, therefore, merely another form of *inability*—not, it is true, inability to acquire, but inability to possess. The undeveloped mind of childhood, however, is thus practically regarded as a state of imbecility, though it is not called by that name either in legal or in medical writings. Farther reference will be made to this subject; but, before leaving it, I beg to call attention to the good that results from looking at states of insanity as often as we can in the light which is cast on them by conditions which are not called insanity, but which are nevertheless in a neighbourly alliance.

The untrained and uneducated mind, though in many respects like the mind of infancy, is not so in all respects. With the arrival of manhood and womanhood the mind cannot help acquiring certain powers and qualities; and, its organ, whether it be cultivated or neglected, goes on in a certain sense to maturity. There may exist a profound and dismal ignorance, which neither medicine nor law will consent to call imbecility. Yet it is well known both to doctors and to lawyers that there is an ignorance—the result of utter neglect, and coexisting with a capacity to acquire—which it would perhaps be a humane, if not rather a just thing, to treat as the equal of mental unsoundness, in so far as regards immunities and incapacities. Expediency, or the claims of society—not science or humanity—determine that it shall not be so.

When the wisdom of discharging its duties is fully recognised by society, and no member of it is left without a sound and suitable education, then the occasion for exacting this claim will have ceased to arise. In the meantime, society will go on protecting itself by punishing those whom it has neglected, finding its justification in nothing higher than views of expediency.

We have nothing to do at present, however, with the extent to which freedom from responsibility is or should be conferred on the imbecile. Different considerations determine that point from those which determine the question now before us. Civil incapacity and freedom from punishment for crime, do not necessarily go together. It is with the first alone that we are here dealing, and even with the first only in reference to a particular act, namely, that of will-making.

We have seen that for medico-legal purposes imbecility is a state of feeble-mindedness, whatever be its origin or history; and we shall now endeavour to show the extent and kind of imbecility which may take away or may leave the power of executing a valid will. "It is impossible, however, to specify any particular rules for ascertaining the mental capacity of imbecile persons; for circumstances, always proper to be taken into the account, are constantly varying with each individual case;" and it is in the dealings of the law itself with the subject that we find the best indications of the measure and kind of feeble-mindedness which destroy testability. Science cannot lay down definitions or boundaries in this matter which would be accepted by law, for no such definitions or boundaries exist, and each case must be judged of by itself, on its own merits, and in the light of all the circumstances. But, nevertheless, some general principles do evolve themselves from an examination of the subject, and these are useful as guides. It will be the aim of what follows to disclose these, and to show that, as a rule, a fair decision is attainable in disputed will cases, where the question hangs on the mere mental imbecility of the testator.

It will be useful at this point to recall two aspects of the position which a will occupies in the eye of the law.

The first of these is that the right to make a will is one which the law jealously guards, and which it refuses to set aside on frivolous pretences. In this respect the law expresses the general desire of the community, by whom the right to regulate the disposal of property after death is much valued, and to whom there is comfort and advantage in the knowledge that it is not an easy thing to take it away.

The second point in the law's relations to will-making, which I think it useful to recall, is that a great degree of intelligence is not held to be necessary to the possession of testamentary capacity. To give instructions for the drawing out of a will is not thought to require high mental powers. It is regarded rather in the light of a simple transaction, and persons are held to be sufficient for it who might be unable to carry out other transactions in a sensible and efficient manner. For instance, it is regarded as a simpler transaction than the buying and selling of shares, the making of investments, the carrying on of a business, etc.; and it would not prove a man to be incapable of making a valid will that he had been found to break down in such matters from weak-mindedness.

These two points—viz., the manner in which the law guards the right to regulate the disposal of property after death, and the view it takes as to the simplicity of the transaction—should never be lost sight of in considering the medico-legal relations of unsoundness of mind, whatever its form be, to will-making.

We are dealing just now with that form of mental unsoundness which is called imbecility, and which was shown to be a mild form of idiocy. Of those mental states of which imbecility is the mild expression, we are not speaking. They certainly deprive a man of the power of making a valid will.

But, as Shelford says, "although *an idiot* is incapable of making a will, yet he that is only of a mean capacity or understanding, or one who is, as it were, between a man of ordinary capacity and an idiot, is not prohibited from making a will or testament, if he has sufficient understanding to comprehend its nature and effect."

That Shelford is correct in stating this as the law, is proved by an examination of the important judicial decisions in such cases; but it is easy to see that when a testator admittedly stands *somewhere between an ordinary man and an idiot*, doubts may arise as to whether he does not stand a little nearer to the idiot than to the ordinary man, and it is easy to see that some may think him near enough to the idiot to be an idiot, while others may declare him far enough away to have testamentary capacity. Such doubts and difficulties lead necessarily to efforts to estimate or measure the mental capacity of the individual testator whose will is in dispute. And "the doubtful and uncertain point at which reason disappears, and at which incapacity becomes evident and manifest, can only be ascertained by an examination of the particular circumstances of each individual case requiring decision." In such cases, it is a question of fact which has to be tried. Lord President Inglis, in Morrison *v.* Maclean's Trustees, soundly said to the jury,—" Capacity or incapacity to make a will is a question of fact, and is not, primarily at least, either a question of law or a question of medical science." "In some cases," he added, "there are rules of law requiring to be alluded to in trying that question of fact, and in almost all cases medical science will be able to give some light to guide us in judging of the facts."

In the case of Ingram *v.* Wyatt, Sir John Nicholl delivered a judgment of great value, containing much that is pertinent to our subject.

He proceeds to consider carefully what is meant by "imbecility of mind"—what are its marks and characters—and he says, "In order to arrive at the true meaning of *imbecility of mind,* we may resort to what the law describes as perfect capacity." "The averment," he says, "to be contained in a common *condidit* is, that the testator was 'of sound mind, memory, and understanding—talked and discoursed rationally and sensibly, and was fully capable of any rational act requiring thought, judgment, and reflection.' Here is the legal standard. When all this can be predicated of the person, bare execution is sufficient; but if it cannot be truly predicated, a deficiency of capacity exists—a deficiency not necessarily rendering the person intestable, but, in proportion to the degree of deficiency, requiring clearer and more direct proof of the unbiassed testamentary intention. Imbecility and weakness of mind may exist in different degrees between the limits of absolute idiocy on the one hand, and of perfect capacity on the other. When the law uses the terms 'mind, memory, understanding, thought, judgment, reflection,' it must not be supposed that they are quite synonymous. By no means; they are separate faculties, though nearly connected with and graduating into each other; and one or more of these faculties may be defective in a greater or less degree, while the others remain perfect in the same individual."

"For example, the memory is sometimes perfect where higher powers of the understanding are greatly defective. When imbecility is original—or, as medical authorities express it, connate—the memory is often perfect, especially of trifling and and simple circumstances, though the other mental powers remain infantine." "In such an individual the understanding has made little progress with years—it has not matured and ripened in the usual manner; yet, even in such individuals, unless the imbecility be extreme, some improvement will have taken place—some progress in knowledge beyond mere infancy will have been made; by the help of memory, by imitation, by habit, such an individual will acquire many ideas—will recollect facts, and circumstances, and places, and hackneyed quotations from books—will conduct himself orderly and mannerly—will make a few rational remarks on familiar and trite subjects—may retain self-dominion, and spend his own little income in providing for his wants, as a boy spends his pocket-money; and yet may labour under great infirmity of mind, and be very liable to fraud and imposition."

"The principal marks and features of imbecility," he goes on to say, "are the same which belong to childhood—of course varying in degree in different individuals:—frivolous pursuits, fondness for and stress upon trifles, inertness of mind, paucity of ideas, shyness, timidity, submission to control, acquiescence under influence, and the like."

This is a lawyer's view of what is meant by inbecility; and I question very much if a better view of it is to be found in the writings of medical men. No one, perhaps, has taken more trouble in attempting to define it than Hoffbauer, but his minute account of the six divisions of idiots and imbeciles is drawn from the depths of his own inner consciousness, and not from observation, and it serves no useful practical purpose. Medical men need not much object to the legal view of what imbecility is; but it is clear that it describes a state which varies so much—up and down, and to the right and left—that in each individual case it will be necessary to ascertain the extent and character of the mental deficiency, in order satisfactorily to determine whether it does or does not destroy the testamentary capacity.

Nothing, however, can be more dangerous or unwise than to assert that a person should be deprived of all his civil rights because he cannot do some particular thing, or because he does do some particular thing, or does hold some particular opinion. Bucknill made more than one error of this kind in his evidence in Morrison *v.* M'Lean's Trustees, as the presiding judge pointed out to the jury. Haslam, again, simply talks nonsense when he says that, "If a person were capable of enumerating progressively to the number *ten*, and knew the force and value of the separate units, he would be fully competent to the management of property. If he could comprehend that twice two composed four, he could find no difficulty in understanding that twice ten constituted twenty." Why, I ask, is he to draw the line at *ten?* Where would such reasoning end? If a man certainly knows that twice ten make twenty, because he knows that twice two make four; may we not go further, and say that, because he knows that twice ten make twenty, he as certainly knows that twice twenty make forty, and so on? But observation tells us that very often this is not true. Definite tests and strong assertions of this kind are extremely unsafe, yet able men are often tempted to use them. Even Casper, ceasing for the moment to be judicial and cautious, says that "a man who knows the year in which he was born and the current year, but who cannot tell his own age, is not in a position to look after his property himself, or to undertake any office or employment." It would be very easy indeed to find actual cases to disprove this and all similar assertions.

"Imbecility," as Sir John Nicholl says, "is a matter of degree, but the degree of weakness differs" (not only in different individuals, but) "in the same individual under different circumstances, and according to the different situations in which he is placed at one time or another of his life." In fact, the testator's whole history may have to be considered—all the circumstances of his life—his education, upbringing, associates, pursuits, etc.; and even then, in the light of every fact which can be brought forward, it may be difficult in some cases to say whether capacity should be conferred or withheld; and the most expert of medical men will by no means be free from such doubts.

It may be useful if I give some account of the state of mind of the testator, in the case which led to the judgment from which I have quoted, since Sir John Nicholl considered that his testability had not been upset, though his will itself was upset—on the ground that the circumstances under which it was executed, as well as its provisions, strongly inferred fraud and circumvention, but not on the ground that it was impossible for the testator to have made a valid will.

This man, then, whom Sir John Nicholl thought testable, was described by the witnesses—I take my account of him from Sir John Nicholl's judgment in the case—as foolish, out of his mind, filthy in his bedroom, disgusting at his meals, insulting people in the streets, hallooed after by boys, calling out continually *yehep yehep*, of eccentric manners, reserved, shy, frivolous, saying the same sort of things over and over again, slovenly in his dress, indolent, averse to exertion, penurious, etc. All this was *admitted* to be true, or nearly so; but, on the other hand, it was held that his conduct in the management of his small income, and his letters to his brother and sister, showed that he was aware (in some degree) of his rights; that he comprehended some matters respecting his property; that he knew how to spend his money with prudence; that he recognised the claims of his kindred; and that he had formed and expressed an intention to make a reasonable and sensible will.

The judge held it proved "that he was a weak man; that, judging both from what he did and from what he omitted to do, his understanding was much below par, and the legal standard of perfect capacity; that inertness, inactivity, indolence, torpidity of mind, inattention to his large property, were the leading characteristics of his weakness; that he was, therefore (to take it no higher), a person so far liable to be imposed upon as to require the Court to look with vigilance and jealousy into the proofs of the *factum;* but that he might possess a testable capacity; and that strong and clear evidence of the *factum*, and of free and active testamentary intention, might establish the executor's case," and the validity of his will. In other words, though this weak-minded man—this imbecile—left nearly his whole property to the son of his own agent, an attorney, not related to him, and in whose house he lived, and left nothing to his sister or to any relative, yet his will might have been held valid, if direct proof could have been adduced that he understood, and freely intended to make that disposition of his property which was embodied in it. His will was not held to be invalid because he was an imbecile, but because fraud and circumvention had been practised on him. Yet the imbecility in his case was not by any means very slight. On the contrary, there could be no doubt that the man laboured under considerable unsoundness and defect of mind. But the judge pointed out that the evidence may prove an imbecile to be testable without establishing such "complete understanding and perfect capacity that a mere bare act of execution shall infer full knowledge of the nature and contents." Hence it is, when the testamentary capacity of an imbecile or weak-minded person is questioned, that very frequently the point eventually turns not so strictly on the capacity of the testator as on his freedom from imposition or undue influence. In order to be held valid, the will of an alleged imbecile must be the unbiassed and free expression of his own purpose and desire. In other words, he may have testamentary capacity, but not the capacity to resist undue influence; and, in proportion to the degree of the mental deficiency, the law requires "clearer and more direct proof of the unbiassed testamentary intention." This just means, that the law may give effect to the wishes of a weak-minded man as to the disposal of his property after death, provided it is clear that they were really his own wishes; but if it be shown that he had been subjected to imposition or to undue and improper influence in the matter of the will, then his weakness of mind may in that way invalidate it.

I do not feel able to show that this procedure of the law rests on any very scientific principle; but, nevertheless, I think that common-sense will give it approval. It is a fact, I believe, that there are men of weak understanding, who, if left to themselves, could and would express wishes regarding the disposal of their property which would be rational and sensible, and which would properly recognise the varying claims of kinship and friendship, yet who are of so facile and yielding a character, in consequence of that same mental weakness, as to be easily imposed on, and overruled into expressing wishes which are not really their own. This, indeed, is only another aspect of that *relational* insanity to which I have so often alluded in these papers,—"Quoad hoc vel illud insanire," or "quoad omnia insanire,"—to be capable of this and incapable of that—to be trustworthy here and the reverse there—or to be incapable in every matter.

I am quite aware that there are some who think the doctrine of relational insanity a very unsound one; but, nevertheless, I hold it to be good doctrine, and one which cannot be overtaught. To say that men are relationally insane, is, in reality, the same thing as to say that they are relationally sane, which last all admit, for it is certainly true that some sane men are competent in affairs in which others prove themselves incompetent. "A person," as Haslam says, "might be able to manage duly a small income who would be inadequate to the distribution of a large revenue; a man might be competent to keep a shop who would become overwhelmed and distracted in the learned professions; a country squire might gallop hospitably through life, without being able to discharge his duty as a magistrate."

Whatever may be thought or said as to what is scientific, it is at any rate a fact, that the existence of this *relational* insanity is fully recognised by the law; and we have an instructive illustration of this recognition in its dealings with children. Thus, a child cannot make a will till he has reached the age of puberty; but, even then, he can only make a will which is valid when it relates solely to movables. He cannot regulate by will the disposal of land: he must be a major, or twenty-one years old, before he can do that. He may sell the land and dispose by will of its price; but, if the land is his when he dies, the law, and not his wishes, will regulate its destination. In other words, it would appear that, in law, there is mind enough at puberty to dispose by will of money, but not mind enough to dispose by will of land. Between the age of puberty and twenty-one, he can enter into scores of contracts by which he will be legally bound; he can marry and beget legitimate children; he can go into business and make money, and buy and sell houses and lands; but he cannot regulate the disposal of any heritable property after his death. There are other things also which he cannot do till he is twenty-one years old. He cannot, for instance, vote for a member of Parliament, or even for a Town-councillor; nay, more than this, even though he be a Cabinet minister, he cannot be appointed tutor-at-law to a lunatic till he is twenty-five. These capacities and incapacities are, of course, resolved on by our legislators with some reference to the mental state or maturity of young persons. The whole question indeed is one of immature and mature minds, of weak-mindedness and strong-mindedness, of sufficient and insufficient understanding, of facility, etc., etc.

All this looks very arbitrary. I do not know that medical men were consulted about the fixing of the ages at which the growing mind becomes sufficient for this or for that; or that the laymen, who framed the laws, thought that their own observation did not make them quite competent to judge of the matter without professional assistance; but it is probable, I think, that the ordinary observation of ordinary men fixed these times; and, if we may judge by the general acquiescence in them, they are approved by the common-sense of the community, and are quietly regarded as, in the main, conducive to the wellbeing and convenience of society.

Notwithstanding this, however, we all know very well that hosts of men at nineteen or twenty are much better able to vote for a member of Parliament than others at twenty-one, and that they could quite as sensibly and rationally dispose by will of their lands as of their furniture or money. Nor, I confess, can we easily see why a man should be allowed to marry and have legitimate children, while he still labours under a certain measure of testamentary incapacity, and is regarded as unfit to vote even in the election of a Town-councillor. Then, may there not be reasonable doubtings as to whether a girl has really the capacity to dispose rationally of her property at an earlier age than a boy, and why, if puberty be the time when that capacity is established, a particular age is fixed, and not the actual arrival of puberty, which comes really at different ages, in different persons, and which, in Shetland for instance, comes systematically at an age later, perhaps, than the one laid down by law?

I could not possibly have found a more apt and telling illustration than this of a relational sanity, or a relational maturity, or a relational imbecility, for the mental state in question may be properly described in any of these ways.

The lesson, however, which I desire to bring out of this peculiar dealing of the law with the imperfect mind of childhood, is this:—It indicates that some at least of the relations of law to unsoundness of mind, are determined by considerations affecting the convenience and good of society, and are not settled on strictly scientific principles. It should never be forgotten by medical men, who are witnesses in medico-legal inquiries, that this is the case. The law does not affect to dispense the ideal justice of the psychologist and physiologist; and medical testimony would have more weight in courts of law than is sometimes given to it, if this consideration was kept more steadily in view, and if it were remembered that much of the inconsistency which pervades the relations of law to insanity, is the result of a consistency in consulting the public weal and public convenience. It will be long, I fear, before the law will be able to act otherwise.

We come now to a point of special importance in the medico-legal relations of will-making to imbecility.

It has been already shown, that whenever the validity of a will is questioned on the ground that the testator was of unsound mind, the nature and character of the will itself must be carefully considered, and must influence the conclusion at which we arrive. But in no cases should the character of the will receive more attention than in those in which it is alleged that the incapacity resulted from mere imbecility; because in no cases is it more likely to reflect the testator's state of mind.

"The presumption of law," Shelford says, "is against the validity of all the legal acts of an idiot; but if it be shown that a rational will proceeded from, and was dictated by, a person commonly reputed to be an idiot, it would be strong evidence to prove that he was not so." This is what the law says. Medical science would, I think, go further, and say that such a will would absolutely prove that, though reputedly an idiot, he was not so in fact, and that a mistake had been made in calling him an idiot, for a will really proceeding from an idiot would inevitably disclose his idiocy.

In like manner, a rational will, truly proceeding from, and dictated by, a person reputedly an imbecile, should go a great way to show that his imbecility was slight or doubtful, and that his testamentary capacity should be acknowledged. "We are acquainted with the mind," as Haslam says, "from the phenomena it displays. By discourse and conduct we infer its soundness—by the same evidences its unsoundness must be detected." Imbecility is a matter of degree, and we judge of the degree by what the imbecile does and says. There may be a great deal about him *sounding to folly*, and much manifest infirmity of mind; yet when we learn that he can thin turnips, or knit a stocking, or be sent to town with half-a-dozen messages, we know that there is reason and memory about him sufficient for these simple transactions. In these matters, then, we pronounce him *not incapable*, because we find him capable of doing them rationally and correctly. We gauge his mental power by its products. What else can we do? So, also, if his will is the production of his unaided and uninfluenced intellect, and if it be rational and sensible in its provisions, it is entitled to some consideration and respect, as indicating the existence of a power to act rationally in that matter. There should, however, be no inflexible rule, and each case should be considered and settled separately, and on its own merits; but the consideration of the question should be approached with these views and in this spirit. Of the soundness of the opinions I am enunciating, I think all will be convinced who reflect on the way in which the contrary views might affect the wills of many old persons who display some loss of memory, childishness, and mental torpidity—who are, in fact, imbecile to a certain extent, but who nevertheless know sufficiently well what a will means, what property they have to dispose of, and who those are who have claims on them, and can take all these things into consideration when framing their wills.

So much, then, for the rational wills of imbecile persons. But let us look now at the other side. What should be the effect on the validity of the will of a reputed imbecile if it is irrational or unnatural? I use here the two words—irrational and unnatural—because imbecility involves the affections as well as the intellect.

When such a will is questioned, it will generally, I think, be safe and just to upset it, and I would not object much to convert the word *generally* into *always.* If a rational will is evidence of understanding—of a disposing mind—*a fortiori,* an irrational one is evidence of the reverse. In saying this, it must be remembered that I have special reference here to the state of mind called imbecility. When we discussed delusional insanity, and its influence on will-making, it was pointed out that if the delusion itself appears in the will, and influences its provisions, both doctors and lawyers are agreed that the will should thereby be rendered invalid; in such a case, the will, in fact, mirrors the insanity. The delusion of the delusionist is seen in it, and that settles the matter.

Should it not give a like settlement to the matter when the folly of a fool is mirrored in his foolish will?

Of course, the question will arise as to what is rational and what is foolish in a will; but I am assuming that the provisions are admittedly rational or admittedly foolish, and I then ask what effects these characters of the will should have on its validity, the testator being an imbecile? I have given it as my opinion, that the rationality of the deed should strongly support its validity; and, on the other hand, I think that if it be irrational, silly, stupid, foolish, and unnatural, this fact should much more strongly support its invalidity.

It is conceivable that a very infirm mind might give forth a sensible and rational will by a sort of chance. If, for instance, the owner of such a mind has lived amidst healthy, moral, and intellectual surroundings, he will have been silently imbued with rational and right-minded notions on this subject; and when he expresses his wishes regarding the final disposal of his property, such wishes may, in strict reality, not be his own so much as the wishes of others. He has been influenced, in fact, unintentionally and educationally, though not, in the eye of the law, improperly. He might give rational and natural instructions for the framing of his will almost parrot-like, as he would repeat the Lord's Prayer or the Shorter Catechism. Such a chance rationality of a will is at least conceivable.

But it can be the result of no such chance when a reputed imbecile makes an irrational, unnatural, or foolish will; and there will very seldom be any practical unfairness in concluding that these qualities of the will were also qualities of the mind from which it proceeded, and that they afford strong evidence of incapacity. It is difficult, indeed, to see why the delusion of a delusionist should upset a will when it appears in it, and not the folly of a fool—or the imbecility of an imbecile—when they make a like appearance. That the foolish wills of fools should stand, cannot, I think, be either for their own advantage, or for the good of society.

ARTICLE II.—*On the Use of the Bowl during Delivery.* By J. MATTHEWS DUNCAN, M.D.

(*Read before the Obstetrical Society of Edinburgh*, 10*th April.*)

THE practice which I wish in this paper to insist upon appears to me valuable and highly important; yet, assuredly, it is a very humble matter, not astonishing by its novelty or its boldness, nor founded on any profound scientific induction. A bowl, to be kept adpressed to the hips if the woman lies on her back, to the upper and posterior part of the thigh if she lies on her side, in order to catch discharge of any kind which may come from the vulva.

Such a bowl I have used for many years in my ordinary management of labour, and I have so high an opinion of its utility that I now solemnly describe it and its application.

The bowl may be made specially for the purpose; or an ordinary small wash-hand or sponge basin, or a kitchen bowl, may be used. The last is not so good as the others, as such are generally too deep and not wide enough. The edge of the bowl touching the soft parts should be without sharpness, and smooth or flat. The bowl should be capable of containing two pints. It is advantageous to have two of them at hand, the one replacing the other when full.

Such a bowl is used at any or at all times during the various stages of labour—to receive accidental or unavoidable hæmorrhage; to receive liquor amnii gushing away or more slowly draining; to receive the liquor amnii discharged after the birth of the child; to receive the placenta; to receive postpartum hæmorrhage.

The ordinary method of conducting labour is to receive all such discharges in cloths—a method which I regard as very objectionable, and this character of it is demonstrated by the following arguments.

The bowl is preferable to the use of cloths because it is a cleaner plan. This advantage requires no proof, for it is plain that receiving discharges in an earthenware vessel and removing them in it from the bed of the lying-in woman must be incomparably cleaner than allowing them to run into and soak cloths, and soil the bed-linen and the clothes and person of the patient.

The bowl is preferable to the use of cloths because it is less expensive. The quantity of cloths frequently required when a bowl is not used, is very great. In questions of practice, such as that now under discussion, it is chiefly the circumstances of the poor that have to be considered; and it is impossible for a poor household or one of moderate means to provide the quantity of cloths necessary for the proper management of a labour. In proportion as the quantity of cloths required is great in these circumstances, so also is great the mismanagement of the case; the mismanagement resulting not only in want of comfort, but also in disease and death. The poor form the great majority of our patients, and cannot afford money to provide a supply of cloths adequate to the requirements of an ordinary labour. The use of the bowl diminishes to a very large extent the quantity of cloths used.

The use of the bowl is preferable to the use of cloths, because it promotes the salubrity of the surroundings of the patient by keeping off injurious damp and cold. Dampness and coldness go very much together in the circumstances under consideration. Both are not merely destructive of comfort, but are injurious, as promoting disease directly and indirectly. The evil may be incurred directly, for every one knows the dangerous action of cold during and after delivery. Nowadays, with our better though lamentably imperfect knowledge of the diseases called collectively puerperal fever, we are not disposed to ascribe so much evil to cold as was formerly done, but there can be no doubt of its injurious potency. In the times referred to flourished the great William Hunter, and it is well known that he regarded injudicious exposure to cold as the chief cause of the disasters which befall women in childbed. But dampness may be very injurious in other ways, for it encourages decomposition and putrefaction. Liquor amnii, blood, meconium, are all full of or composed of materials which are ready to decay or putrefy; whose incomplete removal, therefore, from the bed of the lying-in woman will lead to her being enveloped in an atmosphere full of noxious germs and other baneful products of decomposing animal matters. The use of the bowl facilitates the complete removal of everything that is damp about the newly-confined woman.

The use of the bowl is preferable to the use of cloths, because it enables the practitioner to form a better judgment of the quality and quantity of discharges. This is evident enough at once. But the very great advantage of knowing accurately the quantity of blood discharged in cases of hæmorrhage is too important to be passed over without being insisted upon. Nothing can exceed the vagueness of the ideas of practitioners in most cases as to the quantity of blood lost; and while it is, no doubt, supremely important to judge of the graveness of a flooding not merely by the quantity discharged, but by the effects of the loss on the constitution, as indicated by the symptoms, yet there can be no doubt of the very great value of information as to quantity in every case. In many cases indeed, such as those where constitutional symptoms are slight or absent, the ascertainment of quantity exactly is of primary importance, but ordinarily it is not so.

On these grounds, I strongly recommend the use of the bowl in the conduct of every case of labour. Restlessness on the part of the patient may diminish, nothing can destroy, its utility.

It is well known that the use of the bowl in cases of recent confinement has been recommended, and especially in cases of post-partum hæmorrhage, with objects in view quite different from those simple and homely uses which alone are the subject of this paper.

ARTICLE III.—*The Use of Barnes's Dilators in the Treatment of Complete Placenta Prævia. With two Illustrative Cases.* By ANGUS MACDONALD, M.D.

(*Read before the Obstetrical Society of Edinburgh, 24th April.*)

THE record of the two following cases has been delayed, because I had expected to have met with some fresh cases, to collect and communicate along with the present. But though I have now waited for nearly twelve months, I have not been sufficiently fortunate to meet with a single case of placenta prævia, either in connexion with the New Town Dispensary or in my own practice. I therefore ultimately resolved to bring the present cases before you, in the hope that in the event of some more occurring, a new opportunity of communicating them would be granted.

Now, there can be no doubt, that of all the accidents that accompany parturition, there is not one which exceeds placenta prævia, either in importance or in danger, when this happens to be complete; and there is no complication which tasks more severely the presence of mind, or the steadiness of hand and head of the accoucheur. When one finds his hand passing alongside or through a roof formed of gushing vessels, which, in extent and amount, as they close in the pelvis, always remind me of the roof of a huge cavern, it needs all one's self-possession to maintain a cool head and an active hand. And scarcely can one imagine circumstances more urgently requiring these concomitant conditions. The life-blood of a fond mother and faithful wife, so loved and loving, on whose life and health so many important interests hang, is streaming from her; and the obstetrician feels, that upon the skill and promptitude with which he effects delivery, the happiness and misery of so many hearts depend. Nothing but the conviction that the practitioner has done the very best that the present state of the science and art of obstetrics teach him to do for his patient, can enable him, with a quiet conscience, to meet failure under such circumstances. Any contribution, therefore, which tends to place the practice in such cases upon a safer or surer basis, both in respect to mother or child, or both, is, in the interests of humanity, at least entitled to a patient hearing. In my remarks regarding the treatment of the following cases, I profess to bring forward nothing original. The treatment adopted is that which I understand is followed by Dr J. M. Duncan in his own practice, and to him indeed I owe the first suggestion of it. It is also recommended and practised largely, both at home and abroad, by other accoucheurs. For example, I find it recommended, among other methods, in Schroeder's Text-Book of Midwifery, one of the latest works published in Germany upon obstetrics. All I want to effect is, to direct the attention of practitioners to the great ease, rapidity, and safety, with which the cervix, involved though it may be completely by a large placenta, may be dilated to any amount by Barnes's dilators. In using the term Barnes's dilators, I do not in the very least mean to prejudice the claims of a distinguished member of this Society, Dr Keiller, to their invention. I simply use the term as expressive of the fiddle-shaped indiarubber dilators, which, rightly or wrongly, have yet somehow got associated with the name of Dr Barnes. Premising with these remarks, I proceed to the record of the cases.

CASE I.—Mrs D., æt. thirty-seven, and residing at Pitt Street, Edinburgh, had been thirteen years married, and had given birth to seven children, without any unusual occurrence. But on the 20th of May 1871, she observed some bleeding proceeding from her vagina. As near as she could calculate, she was then about seven and a half months gone in pregnancy. The bleeding continued at intervals till the 31st day of May, when she consulted Dr Archibald Dickson, who, after seeing her, referred her to my care. On vaginal examination, evidence was obtained that we had to deal with an undoubted case of placenta prævia, as also, that the amount of hæmorrhage was already considerable, and was beginning to tell upon the patient's strength. Her material surroundings were also of the meanest description, and ill suited to support her under trying circumstances.

My pupil, Mr John Playfair, kindly took the general oversight of the case. We saw her several times during this day and the next; the bleeding continued at intervals the whole time; and during the day of the 1st of June, the patient thought she felt slight labour-pains. In the evening of this day (1st June), feeling assured that, if the hæmorrhage, which was now copious, were allowed to go on, it would speedily exhaust the patient's strength, I resolved to dilate the cervix and effect delivery, as now we had reason to believe, so far as the mother's calculations could guide us, that she was close upon, if not actually at the end of, the eighth month.

Mr Playfair, two other medical friends, and myself, then went to the patient's house about 8 o'clock P.M., when we proceeded, after making some preliminary arrangements, to effect delivery. As the os had by this time begun partially to dilate, I first endeavoured to introduce within it No. 2 of Barnes's set, and after some difficulty succeeded. After being well distended, the dilator was allowed to remain in for about a quarter of an hour, gradually receiving an addition to its contents during the period by an occasional stroke of the Higginson's syringe. After the cervix had become as far dilated as No. 2 could effect, No. 3 was introduced. But in doing so, considerably more difficulty was experienced, as the placental mass immediately over the cervix obstructed its introduction, and also prevented its being easily held in position whilst it filled with water. The supervention of uterine contraction had now likewise introduced an additional difficulty. But after anæsthetizing the patient, the bag was fairly fixed and dilated in the cervix, and gradually distended to the full extent permissible, during which process another quarter of an hour was expended. Immediately on its removal, the hand was introduced by the side of the placenta, and the feet of the child brought down. The delivery of the child was effected with little further trouble, and labour was completed by 10 o'clock P.M., two hours only having elapsed since the commencement of the operation. At first the infant showed little signs of animation, but after a little time, and the ordinary restorative treatment, it breathed well and cried lustily. During the operation there had been some, but not great hæmorrhage, and as soon as the placenta was expelled, rigid contraction of the uterus ensued, with complete and permanent arrest of the hæmorrhage. The child was small, but fairly developed, and evidently not far short of the full period. The patient made a rapid and excellent recovery. The child languished and died after three days; and notwithstanding our orders to take care of it during this period, we could not get the attendants to pay that amount of attention to its nursing and comforts which its weak condition required, and our suspicions of partial neglect were not diminished, when a funeral certificate was presented to me for signature.

CASE II.—About 4 A.M., an the 22d June 1871, I was hurriedly summoned to see Mrs ——, Northumberland Street, Edinburgh, who had suddenly passed, per vaginam, a large quantity of blood, about a quarter of an hour before, while in the act of micturition. She was thirty-seven years of age, and was, as she thought, about two months or six weeks from her confinement. (On close questioning, I failed to elicit grounds for a more definite calculation as to the exact period of expected delivery.) She now was carrying her seventh child, and all her previous labours had been easy and without complication. I found a considerable quantity of blood in the chamber utensil, and on vaginal examination everything seemed perfectly normal, except that the finger, upon removal, was slightly tinged with blood, and that the cervix felt puffy and loose, and the presenting part of the fœtus distant. The patient also remarked, that for some months previously, she had felt a fulness in the lower third of her abdomen, more than she had hitherto experienced in any of her former pregnancies. The active hæmorrhage had completely ceased, and it was quite impossible, from the high position of the parts, and the occluded state of the os, to form any opinion other than mere conjecture regarding the source of the hæmorrhage. I prescribed an astringent mixture, composed essentially of diluted sulphuric acid, and enjoined the maintenance of the recumbent position, and the employment of a cool regimen. Eight days afterwards there was a slight recurrence of the bleeding, but hing further of importance appeared till the 8th of July, when there was another gush, similar to the first, about 8 o'clock in the morning. After this occurrence, there was never a complete absence of the red discharge, the patient, as she termed it, feeling always slightly wet. Meanwhile, the cervix became at its lower part somewhat relaxed, so as to reveal the existence of a small fibroid polypus in the anterior lip, attached just within the external os. As I failed to reach any portion of the placenta with the examining finger, I began to fancy that this polypus might possibly have something to do with the hæmorrhage. But this renewed large amount of bleeding made me now morally certain that such was not the case.

On the morning of the 17th of July, I was suddenly called to my patient's bedside at about 7.30 A.M., and found that she had just passed a much larger quantity of blood than at any time hitherto. The blood had been partly passed into the chamber utensil and partly upon the carpet, and was evidently large in quantity; and, on examination, I found it still continued to flow, though in diminished amount. Being able now to feel with the examining finger what I was persuaded was a portion of a placenta over the inner os, and feeling assured that further delay would only prove injurious to the mother, and seeing, indeed, that the symptoms of the destructive constitutional effects of the hæmorrhage had actually begun already, while, at the same time, I had every reason to believe that the child was perfectly viable, I resolved to dilate the cervix at once, and effect delivery without further delay. The nurse, who lived close by, was accordingly summoned, and I meanwhile went for my chloroform and ergot and my set of Barnes's dilators. At 8.30, I proceeded to commence the dilatation. After anæsthetizing my patient, I introduced in succession Nos. 1, 2, and 3, without much difficulty, and with surprisingly little concomitant hæmorrhage, notwithstanding that the dilatation of the cervix revealed a most absolute placenta prævia, which involved the whole of the cervix and a great portion of the lower segment of the uterus, instead of its being, as I had been fain to suppose, from the comparatively small bleeding up to the present morning, a case of placenta lateralis. In less than half an hour, I had dilated the cervix to the full amount practicable by No. 3 dilator; and while the latter was slowly allowed to collapse, I introduced my right hand into the vagina and through the os, and passing it through between the left side of the placental mass and the corresponding surface of the uterus, separating the placenta from the uterus as the hand advanced, I then found that the child presented in the most common position of the head; and passing my hand now through the membranes, I got hold of the right foot of the child, and effected version with little difficulty. During this act, however, there was a very copious flow of blood, and I had consequently to hurry the delivery by traction upon the body of the child, aiding this effort by compression and manipulation through the abdomen upon the uterus, so as to compel it to contract upon its gradually lessening contents, for as yet there had not been a *single* pain. After the delivery of the child, the placenta separated spontaneously in about one or two minutes. A tendency to bleed, which developed itself at this moment, was checked instantly by the injection of a stream of cold water for a second or two into the interior of the uterus by means of a Higginson's syringe. This induced powerful contraction of the organ; a dose or two of ergot, so soon as the patient was conscious enough to swallow, succeeded in keeping it up.

The infant came round after the usual efforts at resuscitation, and seemed for some time likely to do well. It never breathed very satisfactorily, however, and died in about ten hours. It seemed somewhat premature, but not much. The mother made a rapid and safe recovery, was up and about in three weeks, and was able to take a drive before the completion of the fourth week.

Now, I think every one will allow that the danger and difficulty in respect to the treatment of placenta prævia are essentially different in proportion as we find the placenta occupying the whole or only a part of the cervix; that is, in other words, whether the case is one of whole or of partial placenta prævia. In the former case, the hæmorrhage is almost sure to be very great, and to require very active measures of treatment; in the latter, the hæmorrhage need not necessarily be so copious, and is much more amenable to treatment. In the case of partial involvement of the cervix, the case ought, and generally does, terminate favourably both for mother and for child, without any interference other than rupturing the membranes when the labour-pains come on, and facilitating the delivery. In such cases, we rupture the membranes in expectation that the head of the child, when it gets pressed upon the placenta as it engages in the pelvis, will itself form a safe and efficient plug, and avert further dangerous hæmorrhage.

But, no doubt, even in such cases, the bleeding is at times so severe as to render the life of the mother in jeopardy, and under such circumstances active interference on the part of the accoucheur is demanded to hasten the labour to a close, either by version or forceps, or otherwise.

In such circumstances, the use of the indiarubber dilator is of invaluable importance, as it furnishes us with a safe means for preparing the cervix for the introduction of the hand, forceps, etc., whilst its presence, for the time being, mechanically arrests the hæmorrhage, as it rapidly dilates the os.

In such cases, also, accidents are apt to occur which threaten the life of the child, necessitating active interference on the part of the accoucheur. More particularly is this the case when the placenta threatens to be pushed down in front of the head of the child, and, onsequently, to be born before the fœtus, or when a prolapse of the rd takes place. These accidents both occurred in a case of partial placenta prævia, which I communicated to this Society some time ago, and in which case I had to effect delivery by first dilating the imperfectly distended cervix, and then turning. This case terminated favourably for both mother and child; but when I recollect the difficulty I experienced in dilating the cervix at that time, and contrast it with the ease with which the cervix yields to the indiarubber bags, I regret much I was not then aware of the advantage derivable from their employment. The only case of partial placenta prævia I have met with since that period, yielded most readily to rupturing of the membranes. The bleeding had been rather severe, and a pupil of my own, who had charge of the case, sent for me in considerable alarm. It was a good case of placenta lateralis. The placenta covered a good portion of the right side of the cervix, and overlapped the os at its right side. But so soon as the membranes were ruptured, and active contractions set in, the child's head came down upon the inlet of the pelvis, and the placenta rather retracted, giving rise to no further hæmorrhage. The case turned out otherwise peculiarly difficult. But there was no trouble from the bleeding.

Though, in passing, I have thus referred to the treatment of partial placenta prævia, it is to the treatment of severe cases of unavoidable hæmorrhage that I mean at present to direct attention more especially, and particularly to urge the advantage of employing the indiarubber dilators in these dangerous cases.

In those cases the whole of the cervix, and no small portion of the lower segment of the uterus, are usually involved as the seat of the placenta, requiring action to be taken both promptly and skilfully.

However obstetricians have differed in respect to the proper treatment of the milder cases, and a variety of methods have been introduced which I do not stay here to enumerate, it has generally been agreed that in such severe cases the proper method is to effect delivery by the safest and speediest method possible, which is usually by turning. But this operation, it seems to me, has been usually too long delayed, on account of the difficulty experienced in finding room for its safe completion in consequence of insufficient dilatation of the cervix; and consequently the patient has been allowed to bleed, slowly it may have been, but yet steadily, till, before an occasion for operation presented itself, the mother has become already moribund, thereby leaving a very uncertain chance for its successful issue, so far at least as the mother is concerned. It has been held also that in such cases there exists a very great tendency to injurious laceration of the cervix, on account of its structure being so largely involved in the placental sinuses. Without denying a degree of cogency to this opinion, I humbly affirm that, judging from my own experience in this matter, I believe far too much has been made of it, since we really find the cervix surprisingly easily dilated and little inclined to tear in such cases. All violence should be excluded from obstetrical operations of every kind, and we think that with ordinary care such accidents should not occur, even in dilating with the hand. But at all events the gradual but certain and equable distention effected by the Barnes's bags, with proper attention in the act of introducing and filling them, removes all danger on the score of rupturing the cervix. One finds these cervices very much more readily distensible, as a general rule, under the influence of the indiarubber bags, than we experience when attempting to dilate an ordinary cervix for the purpose of facilitating premature labour; a fact in practical experience which was forcibly impressed upon my mind no later than last Sunday evening (21st April). To obviate the difficulty and danger of dilatation, the late Sir J. Y. Simpson proposed the complete removal of the placenta in a certain number of cases in which the danger from bleeding was very great, and the practical difficulties in the way of dilatation were also great or fraught with danger. Though I never could see my way to believe the theory of my much revered teacher in regard to the source of the hæmorrhage in cases of placenta prævia, yet from my experience of his method in another case which I also communicated to this Society, I felt convinced that it is one of the methods of arresting hæmorrhage in such cases. And as it is not at all impossible that a true practice might be supported by and built upon a false theory, I was not inclined to quarrel about the theory, provided the practice proved sound. But this method of practice, even granting that it is effective (and I consider it is so, to some extent at least), was only recommended by its distinguished author as a *dernier ressort*, when other efforts at effecting delivery were either inapplicable or had been tried and found wanting, and it certainly condemned the child to perish hopelessly. As the dilatation by means of Barnes's indiarubber bags removes almost entirely the difficulties in respect to dilatation which Sir James Y. Simpson's plan was meant to obviate, the sphere of action of that method seems to me almost entirely removed, and that in all such cases dilatation ought to be preferred to complete separation. Although I have not much to boast of in regard to the results upon the children in the two cases I have read, I can at any rate say that they were brought both alive into the world, and I fully believe that if, in the first case, an ordinary amount of care and attention had been bestowed upon the poor child, it ought to have pulled through. But every circumstance, both in regard to warmth and nutrition, was against both mother and child; and, moreover, I have a strong suspicion that the parents cared fully as much for the funeral money as they did for the life of the infant. In this I am probably mistaken. But even had they been ever so willing to provide for its wants, their extreme poverty prevented them from getting those comforts and attentions which the weakness and prematurity of the infant required. In the case of the other child there never was good breathing, and I think it suffered severely from being nearly suffocated in its passage through the pelvis. It is to be remembered, that the mere fact of footling presentation is in itself, in cases of turning like the present, less favourable to the life of the child than head presentations, as the child's intrauterine life is suddenly stopped before it has the opportunity to breathe; and again we have reason to believe that the fœtus, in its efforts to respire, inhales very objectionable materials into its air-tubes, which subsequently give rise to lobular pneumonia, and so forth. When to this we add the difficulty of dragging a child through a cervix obstructed by the large mass of the half-separated placenta, and that the children in these cases are mostly always more or less immature, it is not to be wondered at that they are so apt to be lost during delivery, or are found incapable of being reared. The mother's life and health are out of sight the most important in such cases; and in those two cases which I have just recorded, I never saw better recoveries than they both made.

As to the time of operating, I think it is of the highest importance to commence early, if we mean to save the mother from risk. Nothing can be gained by delay, if we are satisfied that the bleeding is really serious, and if continued would lead to great risk to the mother's life and health. In such cases, therefore, as present really serious bleeding, the indiarubber dilators allow us to select our own time. We are no longer obliged, as was wont to be the practice, to wait till the hæmorrhage had gone on so far as of itself to induce premature labour, and dilate the cervix to such an extent as to allow of active interference. So soon as the bleeding is really serious, and likely if persisted in to endanger the life of the mother, then I hold we are bound at once, and without fear of any evil consequences, to proceed to dilatation and delivery. This can be safely and surely effected, as happened in my second case, without the occurrence of a single natural pain, the uterus being made to contract closely upon its contents, as they are gradually lessened, by externally manipulating it through the abdominal wall. Special care is needed to make certain that its contraction is good after the expulsion of the placenta. I believe, however, there is not in such cases any great difficulty on that score. In the second case I have recorded, I found that a jet of cold water injected into the cavity of the organ immediately after expulsion of the placenta, secured effective and complete contraction of the uterus, which continued to arrest all further bleeding. To make more certain, however, I administered to my patient a dose or two of the liquor ergotæ so soon as she was sufficiently conscious to be able to swallow. In the other case, pains had already begun previously to the period that I had considered it proper to interfere, so that there was no extra care needed to get the uterus to contract.

One word in conclusion, in regard to the introduction of the indiarubber bags. Their application, I must confess, presents no little difficulty to those who have not had a little experience in dealing with them. It is commonly recommended to employ an elastic catheter as an aid to their introduction. Now, I have found that an elastic catheter is not at all suitable, and that the best means to introduce them is to use a uterine sound. The bags ought to be first well greased, and the blunt end of the sound should be introduced into the little cavity or pocket which is attached near the distal end of the bag. An ordinary amount of care will prevent the sound from penetrating the membranes, as the soft bag is between the point of the instrument and them, whilst in cases of placenta prævia we have the additional intervention of the placental mass between the bag and the membranes. The end of the bag must not be made by the sound to impinge perpendicularly upon the presenting surface, but must be pushed more or less backwards, forwards, or to either side, so as to get a good hold of the cervix when the bag is distended. The sound should be left in so as to keep the bag in position while it is being distended, after which its own form keeps it in its place, and the sound may be safely withdrawn.

As the presence of a portion of the placenta right over the os is an annoying obstruction to the introduction of the bag, one is strongly tempted to introduce the whole hand into the pelvis and to push the bag into the partially open os by the fingers. This is a method which is to be avoided, as it is very unsuccessful, and is painful and irritating to the patient. A little skilful manœuvring with the sound is certain to be successful, and is little if at all irritating.

ARTICLE IV.—*Remarks on the "Health Resorts" of Europe.* By C. MOREHEAD, M.D., F.R.C.P.

VERY recently, several valuable contributions have been made by Dr John Macpherson to the literature of the "Baths and Wells" of Europe. This subject, with its cognate one of Climate, is important, and far from being as yet satisfactorily determined.

Some years after having been closely engaged with the consideration of the diseases of India, I experienced a great desire, with reference to the management of the sequelæ of these diseases, to examine the principal health resorts of Europe.

It was my privilege at that time to have ready access to the wise and friendly counsel of Sir James Clark. Encouraged by his advice, and assisted by a valuable memorandum of hints from his pen, I carried my intention into effect in 1860 and 1861. On my return to England, I addressed the following letter to Sir James Clark.[1] It gave not only the impressions left by recollection on

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[1] Since this letter was written, I have, in 1864, resided for several months in the Pyrenees, chiefly at Bagnères-de-Bigorre, visiting, for varying periods, Luchon, St Sauveur, and Cauterets. This renewed and extended acquaintance with the watering-places of the south-west of France did not modify my general impressions respecting such resorts.

regard to the climates of the south-east of France, the Riviera, and Italy, my mind, but also as confirmed by a careful perusal of the full notes which I had made of every place that I visited.

Remarks on health resorts written ten years since may perhaps seem very useless; but, as these deal entirely with principles, if they were true then, they must be equally true now.

LONDON, *13th October* 1861.

When I returned to England in the spring, I found your house deserted, and was disappointed in not having the pleasure of seeing you, and giving an account of my wanderings. My impression is, that I have not written to you since I received, at Hyères, your kind letter of hints.

I left Hyères early in December, went to Cannes, Nice, Mentone; by the Riviera to Genoa, Pisa, Florence, Rome, Naples, then back to Hyères by Marseilles early in February; visited the naval hospitals at Toulon, and returned to England early in March, by Nismes, Montpellier, Toulouse, Bagnères-de-Bigorre, Pau, Biarritz, Bordeaux, and Tours.

I stayed at the different places varying periods, according to their importance, but at none longer than twelve days; of all, I made as full notes as my opportunities of observation admitted of.

It is most difficult to come to a satisfactory conclusion about these Ligurian and Italian winter climates. Perhaps I did not see them to the greatest advantage, as the season was, I believe, unusually wet. At Hyères, a regular mistral was rare; and there was not, I think, that same degree of regular cold land-wind coming on towards sunset which is so characteristic of the seaboard from Cannes, I suppose I may say, to Naples—at all events, to Genoa—and which, preceded by the bright midday sun, is so treacherous. As you remarked in your note to me, the thermometer is an unsafe guide. It is not only that these dry sharp winds abstract heat rapidly, but there is also less constitutional resisting power—less power of generating animal heat. I know that in the tropics, and also in a good honest English winter, you can make yourself up for the climate; but when you have a compound of tropics and arctics in the twenty-four hours, it becomes very

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my estimate is somewhat higher than it was when I wrote this letter, because a longer experience of English winters has shown me that they are more variable than I had supposed, and that an advantage from greater steadiness can hardly be conceded to them. Still, the fact of sudden viscissitudes from heat to cold in these southern climates remains, necessitating prudence, attention to clothing, and care in respect to cold winds, which, fortunately, blow in winter and spring with a good deal of regularity, and may thus be guarded against.

What visitors to the south in search of health seemed to me not to understand was, that they required warm clothing, that they must learn of each place the directions from which, and the time when, the cold winds blow, and either avoid them by remaining indoors, or by seeking positions sheltered from them, or meet them suitably clad, as their cases may necessitate.

puzzling. During the preceding winter in London, I never once put on a comforter—the *beard* was sufficient; but last winter, in these climates, I never went out without one, and yet the beard was in greater glory. The greater distance of Hyères from the sea is, no doubt, also an advantage to some; but, on the other hand, there is intervening wet land after rain, which I fancied ought not to be lost sight of, at least with tropical invalids. I doubt very much the superiority of Mentone over Cannes and Nice. There are quite as many gaps in the mountain-barrier, with funnel valleys at right angles to the coast-line, for the passage of the evening land-winds. True, the north-west winds are intercepted by a mountain, but merely to be deflected into a west wind, which sweeps the line of road of the westerly bay, and the main street of the town. About the centre of the bay, to the east of the town, there is a wall about fifteen feet high, perhaps a quarter of a mile long. It is upon one side of the road, and the sea is upon the other. The road there is well sheltered from the north and from the west. It seemed to me the only very sheltered spot at Mentone. My Indian eye also looked with suspicion on the wide torrent-beds, of which there are at least three close to the road to the west of the town, in an extent of about two miles. St Remo I stopped at only two hours. Nervi, on the other side of Genoa, I only observed as I slowly passed through it; but I had afterwards the opportunity of comparing my notes with the information of a friend who had resided there two years. The protection from the north seemed very good and continuous, and the lemon tree as abundant as at Mentone.

Of Pisa, Rome, and Naples, I shall only say, that the *un*sanitary state horrified me. One bright Sunday afternoon, I was walking on the Villa Reale with Dr and Mrs ——. They were ecstatic; I hesitated; but, on being pressed, was obliged to say, while admiring the beauty, that the odours were more atrocious than I could have conceived, and that there was no escape from them. Dr —— admitted the fact, but added that you soon became used to them, and that they did not seem to do any harm.

The winter climates of the south-east of France and the Riviera, of Florence and of Naples, to the feelings, reminded me of the cold-season climates of the Deccan table-land and Deccan hill stations in dryness, midday solar heat, and land-winds, with this difference, that the Indian land-wind of these localities and seasons blows chiefly in the early morning. Therefore I conclude that, speaking generally, these European climates are not suitable for those conditions in tropical invalids for which upland and hill cold-season Indian climates are uncongenial.

What a contrast is the climate of Pau! I was there four days towards the end of February, and all were different,—all were calm, —one clear and inviting to exercise, with a sun less oppressive than in e south-east; the second, cloudy, without a distinct sense of dampness, but creating a feeling of languor and depression; on a third, there was prostration equal to that of Bombay in the monsoon, after the rain and wind have ceased, and the heavy air has become a mitigated vapour bath. At Pau, however, there was not the moisture; and though there was no perceptible breeze, I was told by Dr Bagnall that it was the heated air from Spain—a sirocco; an excellent sedative in great bronchitic irritation, I doubt not, but there, I suspect, the virtue ends.

I was pleased with Bagnères-de-Bigorre. It was not the season for the other Pyrenean resorts, and that quaint place, Biarritz, was almost deserted.

Towards the middle of March, I went to St Leonards, Hastings, Eastbourne, Brighton, Worthing, Ryde, Undercliff, Haslar, Netley, Bournemouth, Weymouth, Sidmouth, Torquay, Teignmouth, Dawlish, Clifton, Bath, Cheltenham, Matlock, Buxton, then on to Edinburgh for a fortnight, to see my old friends there.

The scale and style of many of these places astonished me; and, passing from them rapidly through Birmingham and Manchester, it was impossible to miss the conclusion, that these splendid health resorts, where money is spent and health regained, are the necessary complement of our large manufacturing towns, where money is made and health is lost. I was most pleased with Ventnor, Bournemouth, and Torquay.

About the middle of June, I again started for the Continent, visiting Tunbridge Wells, Folkestone, and Sandgate on the way. I made for Paris, and from thence commenced my tour of watering-places, visiting Enghien, Neris, Vichy, Bourbonne-les-Bains, Plombières, Aix-les-Bains, St Gervais, Baden (Switzerland), Schinznach, Baden-Baden, Wildbad, Cannstatt, Homburg, Nauheim, Schwalheim, Soden, Kronthal, Wiesbaden, Wielbach, Schwalbach, Schlangenbad, Ems, Laubach, Kreuznach, Kissingen, Bocklet, Brukenau, Franzensbad, Marienbad, Carlsbad, Teplitz, Pyrmont, Aix-la-Chapelle, Borcette, Spa. At these places I stopped varying periods, according to their importance, at none more than four days; of all, I made notes, according to my own sense, of what I saw. I saw the medical men or not, just as I thought they could be useful or not; as, Pusaye at Enghien, De Laurés at Neris, Vidal at Aix-les-Bains, Falati at Wildbad, Spengler at Ems. I missed, to my regret, Durand Fardel at Vichy, but I saw Barthez for a few minutes.

I took advantage, as far as I could, of all opportunities of seeing the sick in hospitals, and forming my own judgment, as at Vichy, Bourbonne-les-Bains, Schinznach, and, very specially, Carlsbad. The French military hospital at Vichy, under Barthez, is a good institution, to which additions have lately been made. Cases from all the army considered suitable for Vichy waters—dyspeptic, hepatic, renal—are sent in sets for forty days' residence. Each patient is accompanied by a statement of his case, on which his state on admission to and discharge from Vichy, with a note of the treatment, is entered. A copy of this document is made in the Vichy hospital records; the original case is returned with the man to his regiment; after the lapse of a year, the regimental surgeon notes on the original case the *then* state of the soldier, and re-sends the document to Vichy, in order that the hospital record may be completed by addition of this last note. Now, in all this well-arranged system, there is doubtless an honest desire to test the true value of the Vichy waters. It has, I believe, been only a short time in operation, and the results can hardly be known. I confess that I do not expect much. I doubted the accuracy of diagnosis in some of the hepatic cases; and, as far as one may venture to give an opinion from very limited opportunities, the general character of disease was such as hospital discipline and ordinary treatment were quite equal to.

At Carlsbad there is a very good recently-built hospital for the Austrian army, built by general subscription of the Empire. It is almost exclusively for the hepatic and splenic sequelæ of the fevers of Moldavia, Hungary, and Lombardy, for treatment by the Carlsbad waters. I was fortunate in making my visit on a day on which a fresh party had arrived. I had thus the opportunity of examining a good many men in the state in which they are sent, and also some who had passed through the course. The Austrian assistant-surgeon was very civil, and was rather pressing that I should tell him what I thought of the various livers and spleens that passed under our examination. The men, speaking generally, had not the aspect of sufferers from hepatic or splenic disease; and, in a considerable proportion, I could not detect enlargement of either viscus, in which my Austrian friend coincided. In a few there was slight enlargement of the spleen, detectable by percussion, but not greater in degree than we would expect in India to remove by prevention of febrile recurrences and ordinary tonic management. Of the cases which had gone through the course, there was one with considerable splenic enlargement. The size on admission was explained to me, and, accepting it as correct, the decrease of the organ was not more than the same time, with ordinary management, and *without* Carlsbad, would have produced. I therefore saw no evidence of the efficacy of the waters in the hospital, and no cases calculated to prove it; and I could not avoid suspecting that the conclusions might not have been very different if I had been allowed to make equally free with the hundreds of promenaders around the Sprudel and the Muhlbrunnen. At Bourbonne-les-Bains and Schinznach I saw scrofulous joints looking just as they do in other hospitals, but the officers seemed satisfied.

Some general ideas and impressions are left floating in my mind after having seen all these places, which I will state to you. Perhaps they are erroneous, and to be corrected by more careful reflection and further observation.

1. They are, without exception, hot, and therefore not to be sought as cool summer resorts.

2. The attraction from beauty of scenery is the exception, not the rule.

3. Placed as most of them are in valleys, generally with central stream, often with spongy meadow margins, some in narrow valleys, as St Gervais, Wildbad, Plombières, Carlsbad, Wiesbaden, Ems, Kissingen, Brukenau, etc., the climates have the characteristics of such localities—viz., muggy midday heat, evening chills, and, towards September, morning fogs.

4. Residence is generally, in the towns, ill-provided with sanitary arrangements to meet the great periodical influx of visitors; and this evil must be an increasing one from year to year, very specially where the waters are purgative. Carlsbad, Ems, Marienbad, Kissingen, and, I believe I may add, Homburg, are illustrations.

5. That, in certain forms of disease, there is a therapeutic value in alkaline waters, as Vichy, Ems, Fachingen, Bilin; in eliminating waters of chloride of sodium—Baden-Baden, Wiesbaden, Homburg, Soden, Kissingen; of sulphate of soda—Franzensbad, Marienbad, Carlsbad; in mild sulphurous waters—Baden, St Gervais, Schinznach, Wielbach, and Aix-la-Chapelle; in chalybeate waters—Schwalbach, Brukenau, Bocklet, Kronthal, Pyrmont, and Spa,—taken internally, may be readily admitted; but it may be questioned whether, on the whole, the good is not more than counterbalanced by the evils of indiscriminate and excessive use, injudicious routine, and unsuitable climate. For myself, I would rather moderately imbibe the waters at the Brighton Spa than in the localities themselves.

6. As for the bathing and douching systems:—(*a.*) Set aside that prolonged use which excites febrile disturbance as a therapeutic error. (*b.*) Be sceptical as to an efficacy by cutaneous absorption of the saline constituents. (*c.*) Regard the use made by inland communities of brine springs—as Nauheim, Kreuznach, Oynhausen, the Soolen Sprudels of Kissingen and Soden and Pyrmont—as testimony to the value of sea-bathing in appropriate cases; and take hints from the bath organization of these places for the improvement of our sea-bathing establishments. (*d.*) The common temperature is about 96, therefore the action of all those which are slightly mineralized—as Neris, Plombières, Teplitz, Baden (Switzerland), St Gervais, Wildbad, Schlangenbad, Bagnères-de-Bigorre—is sedative, and therefore useful; but it is very doubtful whether the difference in kind of the small amount of saline constituent is of any importance. There was the greatest evidence of faith at Wildbad in the Bath-chairs, the crutches, the lifts, the numerous cripples; and there was a mystery about the organization, the sand-beds over the sources, the shallowness of the water, the artificial heating of the corridors, etc.; but, on inquiry, it was very evident that these seeming specialties were merely in-

genious methods of husbanding the scant supply of water and the scant degree of heat. (*e.*) The value of the different kinds of douche, general and local, in some circumstances, may be admitted; and this will bear proportion to the skill in construction and application. They are most complete at Neris, Bagnères-de-Bigorre, and the new establishment at Plombières. (*f.*) As to the mineralized baths of Vichy, Ems, Franzensbad, Marienbad, Schwalbach, Brukenau, Bocklet, Pyrmont, with their mud adjuncts, if action from absorption is doubted, there only remains more or less stimulation of the skin. (*g.*) Sudation is seldom the indication aimed at. The exceptions,—the occasional use of vapour chambers in many, their general use, combined with shampooing, at Aix-les-Bains. (*h.*) Hitherto, I speak of these baths, with reference to those who daily, by ablution, etc., attend to their skins. To such, these baths are of limited utility; but when the question has reference to those who have not these daily habits, then, doubtless, a month of periodical soaking must be very advantageous. How much of this view may be held to apply to the numerous spa-frequenters, I am unable to say.

Before leaving England, I became possessed of a book that had just been published—"Dictionnaire des Eaux Minérales" edited by Durand Fardel, and two or three others. It is the only book I have seen which treats the subject in a scientific spirit, and is not satisfied with a reproduction and constant reiteration of the rhodomontade of local writers.

I have not gone over and reflected over all these various health resorts without going often back in thought to my Indian life, and inquiring how the climate of India stands in comparison with these. There, as elsewhere, you have your bad localities and unfavourable seasons; but, what with coast and table-land and mountain, I incline to the belief that it is easier to make out a continuous year of salubrious, and, at the same time, sufficiently invigorating, climate in India than in Europe. The present problem is, by careful research and observation, to multiply the number of healthy coast, table-land, and mountain positions, arrange them well, and organize a system and machinery of changes with reference to the season.

But I must end this letter of unreasonable length.

ARTICLE V.—*Case of Recurrent Secondary Hæmorrhage after Amputation of the Leg, successfully treated by Ligature of the Femoral.* By JOHN A. M'DOUGALL, M.D., Galashiels.

THE fortunate rarity with which such treatment is rendered necessary, and its perfect success in circumstances certainly far from favourable, lead me to record the following case.

John L., æt. 67, a coal-porter, was, on the morning of the 18th December, while in the discharge of his duty, suddenly jerked from a railway waggon on which he was standing, and, falling between the rails, the wheels of one or more loaded waggons passed over his right leg a little above the ankle, crushing at the same time the great toe of the left foot.

I saw him within a short time of the receipt of the injury, and found him suffering markedly from shock; rest and stimulants rallied him, and he was removed to his own house.

There, with the kind assistance of Drs Somerville and Tweedie, I amputated, by the modified circular method, the injured leg in its lower third, removing at the same time at its metacarpo-phalangeal joint the injured great toe.

From the fact that the tourniquet did not act well, and that considerable difficulty was experienced in securing the peroneal artery, he lost a good deal of blood; this, coupled with existing *morbus cordis*, and the primary shock of the injury, depressed him much, and it was some little time before he fairly rallied.

Ordered brandy in teaspoonful doses every quarter of an hour, and warm beef-tea at intervals.

Vespere.—Pulse 90, of fair strength, surface warm, temperature 101°, slight oozing from stump.

His progress for some days after this was on the whole favourable; his pulse of fair strength, but very irregular; his temperature ranging between 101° and 102° F. There was slight sloughing of the margin of the flaps. The ligatures separated on the tenth day, and then the stump, which was looking well, was fully one-half healed.

3d January.—Bowels were moved this morning by a dose of castor-oil, but he complained much of the straining.

Vespere.—There has been some bleeding from the stump, and although small in amount, the rapid wây in which it had flowed and its bright colour leave no doubt as to its being arterial.

Stump was elevated and cold applied, strict orders being given to keep a watch upon it.

4th.—There has been no return of the bleeding, but the stump was not disturbed, lest some protective clot might become displaced.

5th.—This evening I was hurriedly summoned to visit John L., as his stump was said to be bleeding profusely. When I saw him he was pale and blanched, the bed contained a large quantity of clot, and there was still very active hæmorrhage going on. From the direction in which it seemed to come, I hoped it might be some periosteal vessel which had given way, in close proximity to an unseparated slough, but as no bleeding point could be detected, I laid open the stump. I then found the anterior tibial artery to be its source. On attempting to ligature it I signally failed, as more than once it gave way under the tightening. The diseased condition of its coats was then but too apparent, so I cleared and tied it at as high a point as I could reach; here the ligature held. The stump was left open, and cold applied. The shock to the old man was very considerable, calling for the free exhibition of stimulants ere he rallied.

6th.—As there has been no recurrence of the bleeding, the stump was brought together by strapping.

For another week all went well, granulation did its work, and the stump was again wellnigh closed, when, on 13th January, when dressing the stump, I found the ligature loose in the dressings. Ere I had finished the dressing, however, the hæmorrhage recommenced, and with even greater force than on the former occasion.

Dreading much a repetition of the shock attending the opening up of the stump, and fully aware of the diseased condition of the vessel in its face, I determined to ligature the femoral in Scarpa's triangle.

Here, again, I acknowledge gratefully the assistance of Drs Somerville and Tweedie.

The operation was easy of performance, but the dilated condition of the vessel, and the attenuated state of its coats, rendered necessary more than usual care in the separation of its sheath, and in the tightening of the ligature; this accomplished, the bleeding from the stump ceased.

The limb was then wrapped in cotton wadding, and the patient removed to bed.

The circulation became very rapidly re-established. Ere evening, within eight hours of the operation, the stump had not only regained its warmth, but by its appearance and the presence of discharge gave very evident signs of returning action.

14th.—Has slept well, pulse good, temperature 101°, stump looking well.

20th.—Stump nearly closed; greater part of ligature wound healed by first intention; general appearance of patient satisfactory.

The bowels have been kept locked since the operation until to-day, when they were moved by an enema. During their action I carefully compressed the femoral on the pelvic brim, so as to avoid the pressure of the blood column at the point of ligature; spite of this there was considerable bleeding, not only from the ligature wound, but from the stump also; so soon, however, as the strain was over, this ceased.

27th.—Bowels again moved by enema, and the same precaution observed as regards compression of the vessel; again bleeding occurred, but to a very slight extent.

31st.—Ligature separated to-day, the eighteenth day from its application.

From this time all went well; the strength of the old man gradually returned, and, keeping pace with this, the stump healed kindly, and the ligature track gradually contracted. Now, 25th February, though maimed and disabled, he is cheerful and happy, and looking still for a certain "length of days."

This case, illustrative of a good and well-known proceeding in gery, presents, I think, some features of interest.

Secondary hæmorrhage after amputation is always a source of grave anxiety to the surgeon, and the means for its arrest matter of deep interest. Often its occurrence calls most peremptorily for the exercise of his best judgment and ripest experience. Means applicable and most useful in other circumstances may be of no avail here, as deep in the substance of an all but closed stump may be the bleeding part. To secure this will he, by breaking up the stump, undo at once what it has taken reparative action days, it may be weeks, to accomplish? or will he, trusting nature's hæmostatics, aid her, by weakening the force of the circulation in the limb through ligature of the main trunk?

The circumstances of each individual case must decide this; the cause of the hæmorrhage, the condition of the patient, even the site of the amputation, are all points for anxious consideration.

In some, as in bleeding from an unhealthy stump, either the result of diseased reparative action, or from the morbid process for which the amputation was performed rapidly returning, we have no choice—to attempt to secure the bleeding part would in all probability be futile; ligature of the main vessel is the only resource. When from hæmorrhage, either rapid and severe, or because long continued, we find the vital powers of a patient much depressed, ligature of the main vessel may be a preferable proceeding. Opening up a nearly healed stump is an operation certainly attended by considerable shock, and the after-process of healing by granulation is necessarily slow. The site of the amputation also claims attention, for it is possible, as in the case of amputation of the thigh, that the bleeding may come from a vessel which, from its high origin, or more especially from its connexion with the nutrition of bone, would not be completely controlled by ligature of the superficial femoral.

As a general rule, however, it is undoubtedly best, in the first instance, to attempt to secure the vessel in the face of the stump. In the great majority of cases it is successful; and even where there is doubt as to the condition of the arterial coats, it is advisable, as we know well that the diseased action may be of most limited extent—a mere patch, which it is easy to get beyond. Failing this, failing acupressure, which in such cases sometimes acts admirably, we have the ligature of the main vessel as a *dernier ressort.*

The case just related is one in point; ligature in the stump signally failed, while deligation of the femoral was fortunately attended by success. This success, in circumstances certainly not very cheering, I cannot help associating to a certain extent with the management of the patient while at stool.

One fact struck me forcibly in connexion with the attacks of hæmorrhage, that they bore a direct relation to the strain attending movement of the bowels. This relation was not difficult of explanation. With a much hypertrophied heart, with atheromatous arteries, the natural elasticity of which had all but disappeared, under strong muscular effort, attended by fixed respiration and laboured heart's contraction, it was no wonder that the imperfectly vitalized clot gave way. This became the more apparent when, on compressing the femoral on the brim, I was conscious of his heart's stroke. Had in its full force that stroke been given, I am certain that all surgical effort would have been set at nought. I cannot but regard it, then, as a matter of great importance, where you have diseased vessels to deal with, this natural strain should so far as possible be avoided. All know well its danger in some cases of heart disease, and medical science bears many a record of its fatality. In many cases it is of course impossible to compress the vessel between the heart and the site of ligature, but in them I would carefully lock the bowels for sóme considerable time after the operation.

This is not difficult to accomplish. A nutrient dietary, containing small solid residue, can be readily arranged, such a dietary as conduces most decidedly to the formation of blood-clot, which, though a primary, is certainly a most important step in the occlusion of arteries.

It is a matter at least worthy of consideration—it is not difficult of management—it in no way interferes with the ordinary treatment of the case; and I cannot help regarding it as markedly conducing to the success of a case, the prospects of which were at the time of the operation far from favourable. Thus far;—but before closing, let me, in connexion with this case, say something of amputation above the ankle. Many good surgeons condemn the proceeding, and recommend that no amputation be performed between the ankle and "seat of election." The length of the stump, and the risk from its thin covering, of its being tender and painful, are the adverse reasons.

The first is, however, really no objection, as length of stump, giving as it does increased lever power, aids the machinist much; while the new modes of amputation have done much to refute the second.

The long rounded anterior flap, or the equal rectangular flaps, as recommended by Fayrer, give excellent results. For the proper performance of these amputations, however, the skin and tissues above the malleoli must be intact, and where, from the action of the disease, or more frequently the injury, these are destroyed, the majority of surgeons still hold that the operation should be performed below the knee. This adds much additional risk to life, and it sacrifices great part of a limb which may be most usefully retained. My experience, certainly not a large one, I would give very decidedly in favour of the low operation. I have amputated some inches above the ankle, both by the modified circular (with a high division of the bones), and by a long internal flap of skin (the limb treated in its outer side), and have had good reason to be satisfied with the results. In one instance, the patient walked with an artificial limb the distance of twelve miles within eight months of the operation. The good rule in surgery, to save as much of the body as possible in every amputation, needs, I think, no infringement,—this, formerly the only exception, might, I think, well be blotted out.

ARTICLE VI.—*Pleuro-Pericarditis—Paracentesis Pericardii.* By P. H. MACLAREN, M.D., F.R.C.S.E., Lasswade.

(*Read before the Medico-Chirurgical Society of Edinburgh, 3d April.*)

A. D., æt. 27; paper-worker; tall, muscular, and well nourished; had previously enjoyed good health until between three or four months ago, when he began to complain of headache, short dry cough, with slight febrile symptoms, unaccompanied, however, by any pain in the chest. Under these circumstances, he continued to work for about a fortnight; but increasing dyspnœa and weakness at length compelled him to desist.

The practitioner who attended him for seven weeks looked upon his case as one of influenza, and used various remedies, which failed to check the progress of the symptoms. When I first saw him, 3d December, he had with difficulty walked a distance of a mile and a half to my house. His pale, swollen face, with anxious expression, betokened the existence of serious illness. On examining his chest, the dulness over the heart was found to be much extended in the transverse diameter, the apex-beat scarcely perceptible, the heart-sounds with difficulty audible with the stethoscope, and his pulse rapid, weak, compressible, of a peculiar sinuous character, almost amounting to irregularity.

His respiration was laboured and frequent. Inspiratory murmur anteriorly on both sides was exaggerated. No crepitation. Percussion resonance could be elicited throughout the whole anterior aspect of left lung; but on the right side the cardiac dulness could not be distinguished from a dulness at the lower third of right lung, which at the moment was presumed to be hepatic. Posteriorly, the respiratory murmurs were clearly audible on the left side, less distinct at upper two-thirds of right side, and inaudible at lower third.

The tongue had a white centre and very red edges; but the patient's appetite was good, and his digestion regular and painless. Urine was reported rather scanty, of a dark colour, and deposited a bright-red sediment.

The patient slept pretty well in the semi-recumbent position, which he could not change without great discomfort in breathing. He had never had rheumatic fever.

Was ordered to remain in bed; to take a mixture of iod. and acet. pot., and ℥i. of whisky ter in die.

On visiting him a few days after, I found there was slight general anasarca, that the urine was not albuminous, and that the quantity passed in twenty-four hours amounted to 3½ teacupfuls—about 18 oz., and that this had not been increased nor the general symptoms improved by the medicine he was taking. A similar result followed the use of a pill of cal. scil. and digital. Failing to rouse the kidneys to action, an attempt was made to carry off the extensive effusion through the bowels; and for this purpose a pill containing elaterium, increased from 1-8th to 1-4th of a grain, was given night and morning. By this means frequent watery evacuations were procured, and the general anasarca diminished—only, however, to a slight extent. But he still suffered from orthopnœa, and the pericardial effusion became so great that the apex-beat was entirely lost to the hand, and the heart-sounds to the ear. The character of the pulse was now exceedingly peculiar, best described as fluttering, indistinctly wavy, and easily compressible. His lungs, in which at first the vesicular murmur could be heard, began to evince coarse crepitation; and finally, on the right side, at the lower half of the lung, the vesicular murmur disappeared, the percussion becoming dull to the same extent.

As the continued use of elaterium was apt to reduce his strength, and thereby rather encourage the general exosmosis, that remedy was abandoned, and tinct. ferri mur. substituted. At the same time a succession of small cantharides blisters were ordered to be applied over the pericardium. After this his condition grew steadily worse, until, seeing the failure of medicinal agents and the great urgency of the case, I proposed and performed paracentesis pericardii, on Saturday, 10th February 1872. An incision was made, about 1½ inch long, transversely in the fifth left intercostal space, the inner edge of the wound being close to the left side of the sternum. After carefully dividing skin, superficial fascia, and the intercostal muscles near the upper margin of the sixth rib, the distended sac of the pericardium was felt, and an exploring needle trocar thrust into it. A serous fluid of a greenish-brown colour at once flowed from the canula, over the external orifice of which a piece of india-rubber tubing was slipped and held firmly, while the other end of the tube was kept carefully under water. In this manner 35 fluid ounces were discharged. As the sac was emptying, the heart, which had been floated up towards the left, gradually sank into its natural position, at length touched and afterwards rubbed firmly against the canula, giving rise to a disagreeable sensation the patient was unable to define. By withdrawing the instrument a little, and turning it towards the right, this discomfort was avoided. When the discharge ceased the pulse at the wrist was 108, well defined, the apex-beat distinctly perceptible, and the heart-sounds audible, accompanied by a soft friction murmur. The lips of the wound were now brought into close apposition, secured by three stitches, and covered with a piece of dry lint. The patient was able to lie down, and was manifestly relieved; but the relief was not by any means so great as I expected, ·s might have been anticipated, after the withdrawal of so much fluid disturbing the heart's action and position. But the extensive pleuritic effusion on the right side and the œdema of both lungs being considered consequent to the pericardial disease, it was hoped that the removal of the cause would be followed by immediate subsidence of the effects.

11*th February*.—Breathing still much embarrassed; right lung very dull to within three inches of clavicle. Vesicular murmur only audible at apex. Left lung resonant anteriorly, duller posteriorly, and on both aspects respiration puerile. Heart's action very rapid. Sounds, beat, and friction murmur same as yesterday; urine rather more copious. Ordered tinct. digital. ʒi., t. ferri mur. ʒiii. M. 20 drops in water thrice daily after food.

12*th*.—Respirations 44; pulse 92 per minute, wavy. Heart's sounds audible, but no friction. Respiratory signs and symptoms as formerly; no bulging of intercostal spaces; ascites and anasarca unaltered; 27 oz. of urine passed in the twenty-four hours; wound healing by first intention. As the bowels had not acted since the 10th, ordered a pill of calomel and jalapine.

13*th*.—Bowels acted once; urine more copious, notwithstanding there is slight general increase in the effusion, and corresponding aggravation of all the symptoms. Orthopnœa returned; face much swollen; heart-sounds distinct; pulse 90, weaker; respirations 60 per minute. Ordered a large mustard poultice to be applied to right half of chest for three-quarters of an hour, and thereafter linseed poultices to be kept on continually.

15*th*.—Has had very little sleep, and feels drowsy and exhausted; heart-sounds fainter; pulse at the wrist one continuous vibratory thrill, impossible to count. Bowels have acted naturally. Urine 30 ounces.

16*th*.—Became mildly delirious in the afternoon, gradually weaker, and died about 12 P.M.

Sectio Cadaveris, sixty hours after death.—On opening the chest, the right pleural cavity was distended with about two and a half quarts of a straw-coloured serous fluid, passing through which thick bands of organized lymph connected the lung to the parietes throughout its whole extent. A strong sheet of lymph passed from the lung to the under margin of the fourth rib, and to a great extent shut off the principal collection of fluid, confining it below the level of that rib. The lung was firmly bound to the pericardium and anterior margin of diaphragm. On section it was crepitant in the upper third, very œdematous in lower two-thirds, and contained scattered miliary tubercles about the size of a millet-seed. The pleura on this and also on the left side was three or four times its natural thickness, studded on the inner surface with innumerable nodules of fresh lymph, and generally highly vascular. The left lung was pushed upwards and backwards towards the apex of the cavity and spinal column by the distended pericardium and pleural effusion. It was crepitant generally except at base, and contained also many miliary tubercles scattered above, more numerous, more closely sown, and larger below.

The pericardium greatly hypertrophied and partially distended with about 12 oz. of fluid similar to that removed by paracentesis. This effusion was of a greenish-brown colour, non-coagulable, and deposited on standing a lighter brown sediment, composed of blood-corpuscles, tri-nuclear cells, and molecular matter. The sac varied in thickness from a twelfth to a fourth of an inch, and was changed into a white dense substance resembling inter-vertebral cartilage. Its outer surface was covered with a coarse granular deposit of lymph on the left side, and on the right was firmly united by the same material to the right lung. On the inner surface of the pericardium, and in that portion of its serous lining covering the heart, there was a universal deposit of lymph of a pinkish hue, collected in large quantity around the base of the heart, especially posteriorly, and gave rise to a marked cauliflower appearance. There were no adhesions. The heart substance was of a brownish-slate colour and closely adherent to the thickened outer serous layer. The right ventricle was filled with clots; and all the valves were smooth and competent. The liver was normal in size and form; cells loaded with fat. Kidneys large and flabby; tubuli filled with fat-cells, but epithelial layer entire.

Remarks.—The insidious approach and obscure character of the symptoms of non-rheumatic pericarditis render its detection in the first stage extremely difficult. In Dr Stokes's arrangement of the disease into three stages, the phenomena included under the first form are nothing more than a series of negations. "Absence of pain or local suffering frequent; no sign of muscular excitement, nor any special character of pulse; no increase of dulness over the heart."[1] Unfortunately also the thermometer[2] is of no service here, and even at the more advanced stages is little affected. The only positive symptoms the patient exhibited were general debility, and a short cough without expectoration.

When he came under my care, seven weeks after the beginning of his illness, all the vital phenomena and symptoms of pericardial dropsy were so fully developed that no hesitation was felt in making the diagnosis. It was also soon evident that the impeded breathing and right costal dulness were due to pleural effusion, and that a limited degree of the same morbid action existed on the left side. Now, as the previous general health of the patient was good, and there was no history of any pain in either side, while also the pericardial dropsy was most pronounced and greatly embarrassed the heart's action, it was erroneously concluded that the mechanical obstacle giving rise to the ascites and anasarca produced the pleural effusion also. But the numerous strong bands of lymph which stretched across from lung to ribs in the right pleural cavity showed that a considerable deposit of lymph had taken place before effusion occurred; and the morbid changes the pleuræ themselves had undergone, was presumptive evidence that disease in these membranes and the pericardium was probably consentaneous.

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[1] Stokes on Diseases of Heart and Aorta, page 4.

[2] Wunderlich on the Temperature in Diseases. Syd. Soc., chap. xviii.

The medical treatment of the case extended over a period of nine weeks, and all the drugs used were subjected to a fair trial before they were discontinued as inefficacious. There was no opportunity for antiphlogistics. Paracentesis pericardii is very rarely performed (as one may judge from the fact that Dr Stokes has never seen it), but the operation is reported to have been done successfully by several writers mentioned in Trousseau's[1] excellent paper on this subject. Closer inquiry into the history of these successful cases always raises a doubt of their issue, as the disease when chronic and latent, like the present example, is usually associated with the tubercular or cancerous diathesis. In the present state of our knowledge, the operation can only be regarded as a palliative, which should never be withheld on account of the supposed difficulty or danger of performance. The points to be kept in view in removing the fluid from the pericardium are, to choose the most dependent spot practicable; to avoid injuring the pleura, internal mammary, or intercostal vessels; and prevent air entering the emptied sac. These indications were fulfilled in the plan I adopted; and my only regret is, I did not at the same time tap the right pleura, and give my patient more relief in the last days of an incurable disease.

ARTICLE VII.—*Insanity dependent upon Constitutional Syphilis.* By STRETHILL H. WRIGHT, M.D., Senior Assistant at the Royal Edinburgh Asylum, Morningside.

VARIOUS forms of mental disorder may be traced to a syphilitic origin; and the mental symptoms arising in the course of the disease may vary from an occasional and slight feeling of mental incompetence, dependent upon the constitutional depression which attends the development of the syphilitic virus, to those grave forms of mental and nervous disorder which, depending upon structural modifications of the membrane or substance of the brain and spinal cord, result, in many instances, in the utter wreck of the constitutional power, mental and physical.

It is not proposed in the present paper to discuss at length the subject of syphilitic affections of the cerebral and general nervous system; but it is desired to distinguish, if possible, between certain sets of cases, for the distinction being in so far one of degree only, hardly merits the title of a class distinction. In all these cases quoted in the following notice, the symptoms of mental disorder arose as effects from, and were closely connected throughout their progress with, a coexistent constitutional syphilitic affection, and yet they greatly differed in their gravity and amenability to treatment.

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[1] Trousseau's Clinical Lectures. Syd. Soc., vol. iii.

I have selected the following series of four cases, as I think they will illustrate the distinctions of which I would speak. Three of these are cases of persons who have been under treatment in the Royal Edinburgh Asylum; the fourth I have taken the liberty of quoting from an excellent paper by Dr Williams, of the Sussex Asylum, at Haywards Heath, which appeared in the *Journal of Mental Science* for April 1869.

I. The case of Mr P. On admission, this gentleman presented symptoms of nervous and mental disorder of a very acute type. The appearance of mental symptoms in this, as in the vast majority of cases of *acute* mental disorder, was preceded by a period of general constitutional ill health.

The patient had, for about two years previous to his attack of mental derangement, led a very dissipated life, and had suffered from more than one attack of constitutional syphilis. His general health became impaired under the combined effects of hard study, and the mental anxiety he suffered as to the results of his disorder. His mental perturbation at length became such as to attract the attention of those about him; he was observed to have undergone a complete alteration in disposition; he had become gloomy, morose, and silent—a change which was the more noticeable, as his natural disposition was of a lively, cheerful caste. Finally, this boding state of mind was interrupted by an outburst of mania, of such violence as to necessitate his immediate removal to a place of confinement; he was accordingly admitted into the Royal Edinburgh Asylum.

While speaking of information derived from the reports of others, not the results of personal observation, I may give the patient's own account of the invasion of his mental symptoms, as he described it when in a state to afford trustworthy information. He describes the invasion of his disorder as follows:—About four months before admission, being then affected with constitutional syphilis, he determined to reform his mode of life, and forego drink and sexual indulgence; he was reading physic hard at the time. The mental struggles he experienced in striving to carry out his resolution were very severe—so severe, that he was conscious of his disposition becoming changed under the trial; he felt that he was losing his self-control. This was some time before any abnormal symptoms were noticed by others. Finally, his power of self-control entirely gave way, and he was unable to resist his desire to destroy everything around him.

On admission, Mr P. was found to be covered with a syphilitic eruption of the secondary type; the scars of old chancres were also present. The symptoms of his mental disorder were those of the most violent excitement, *with intermissions*, during which all the symptoms of insanity were much mitigated. At the conclusion of these maniacal attacks, he sank into a state of unconsciousness, succeeded by clonic spasms of the flexor muscles of the left forearm and right side of the face, which, in turn, gave way to a series of epileptic fits, three or four in number, of a very violent nature. After emerging from these fits, Mr P. would stare about him for some minutes in a demented manner, as if his power was quite exhausted by the extreme violence of the epilepsy. While his mental disorder was at its height, the patient had delusions as to the identity of persons.

One very striking feature in this gentleman's insanity was its intermittent character; at first there was merely intermission in the violence of the mental excitement, but as recovery from the syphilitic disease and its accompanying febrile condition took place, intervals of perfect immunity from excitement occurred, during which he was quite rational and collected.

It is very interesting to note, that after the convulsive seizures had entirely ceased to succeed the maniacal paroxysms, and the patient had so far recovered as to give a rational account of his sensations, he stated that he was aware when a fit of excitement was coming on, as it was preceded by a creeping sensation of the scalp. Does not this very much resemble an epileptic aura?

Mr P.'s illness resulted in the perfect recovery of his bodily health, and the complete restoration of his mental power.

II. The next case in the series is that of J. B., a cab-driver, æt. 34.

The points to which I would specially draw attention in this case are:—That the patient has been more than once insane, and that before and since his first attack of insanity, he has suffered from constitutional syphilis. He has never had nodes on any part of his body. On the occasion of his first attack, he was a patient in the Royal Edinburgh Asylum. The symptoms of his insanity at that time were of the demented type; there was general failure of the mental vigour; he entertained delusions of a somewhat depressed type, and was childish and inconsequential in his conduct. There were no symptoms which call for special remark; as his wife well described his insanity, he did "awfu' (*Anglicè* very) daft-like things." He was resident in the asylum upwards of six months, and was discharged recovered.

This man has recently undergone a decided relapse; he seems, indeed, at all times, to waver on the border line of insanity.

I owe my knowledge of his present attack to the kindness of Dr G. W. Balfour, under whose care he has been in the Royal Infirmary here.

On the present occasion, his wife informed me that she first noticed symptoms of decided insanity after the violent action of a dose of purgative medicine; he was much reduced by the action of the medicine, and, as she phrased it, "has never been right since."

The symptoms of his present attack somewhat differ from those reported as shown by him on the occasion of his previous illness. His insanity is now very markedly intermittent in character; at times he is quite well; he entertains no delusions; indeed, his disorder seems to consist of more or less constant intense nervous irritability, which renders him extremely sensitive to any little annoyance. "No one can please him." He suffers also from occasional severe neuralgic pain in his left temple, which is very sudden in its invasion, extremely severe while it lasts, and equally sudden in its departure. He has never had even a threatening of a convulsive epileptic seizure.

III. The third case is that of Mr M. This gentleman's is a typical case of chronic insanity in connexion with constitutional syphilis. The history of the case is as follows:—The patient is naturally a man of a highly susceptible nervous temperament. He has been insane for about seven years. Before becoming insane, he was employed as an insurance agent, and was painstaking, and very conscientious in the discharge of his duties. The first symptom of mental unsoundness betrayed by him, was the manifestation of groundless suspicion as to the disposition of others towards himself; he imagined that his employer tried to damage his prospects, and that his landlady wished to poison him. His mental and nervous disorder at length became such, that he attempted self-destruction; he was then placed under restraint. Mr M. has, on two separate occasions, been an inmate of the Royal Edinburgh Asylum; during the interval he was a patient in other asylums.

On the occasion of his first residence at Morningside, he is reported as suffering from a syphilitic affection of the secondary type. His mental disorder is described as being intermittent in its character; it took the form principally of acute mania, and the paroxysms of excitement were sudden in their invasion, and very severe. He entertained delusions of the wildest kind, chiefly referring to crimes and outrages connected with criminal sexual indulgence; but he also entertained delusions of suspicion, as described above. He was considered a dangerous patient.

It is from the time of his second admission that my personal knowledge of his case dates. At this time he was in a pitable state of bodily ill health and mental disorder. He was affected with tertiary syphilis; had at least one distinct node on the head, and has since, more than once, suffered from chronic syphilitic swelling of the testicle. His appearance on admission was wild and haggard; he was extremely suspicious and irritable, and his delusion as to the evil disposition of others towards himself was very prominent. He was also suicidal.

Since that time this gentleman's condition has undergone a marked improvement, mentally and physically. The symptoms of his mental unsoundness never quite disappear, but they intermit in rity for prolonged periods, and depend very much on the state of the weather, the occurrence of slight bodily indisposition, etc., to bring them into prominence. Though his mental condition will probably never be such as to warrant his entire liberation from control, still he now has sufficient self-command to be entrusted with all the privileges accorded to the most responsible patients in the asylum; he has the unrestrained liberty of the grounds, and frequently walks alone beyond bounds.

IV. The last case of the series is that which I have already mentioned as being quoted from the paper by Dr Williams, in the *Journal of Mental Science* for April 1869. This patient, a female, led a very dissipated life; before admission to the asylum, she had for some time suffered from syphilis; when admitted she was in a state of great mental prostration; she refused food, neglected the calls of nature, was taciturn, and avoided the society of others; yet, if roused, she was capable of answering intelligently, and of recalling past events. She is further described, on admission, as being of stout bodily habit, but of a flabby unhealthy appearance; she presented well-marked symptoms of both secondary and tertiary syphilis. Some time after admission she is reported as complaining of severe headache, with impairment of hearing; she was also subject to attacks of vertigo.

After a residence of four months, she began to suffer from epileptic fits.

Again, after a space of two months, her cerebral disorder assumed the form of mental excitement; the headache and vertigo at this time disappeared. *The syphilitic eruption appeared and disappeared at intervals during the course of her illness.* Finally, the pain in the head, with vertigo, returned; the vision became affected; left-sided hemiplegia gradually crept on; general failure of the mental power succeeded; and she gradually passed into the comatose condition, in which she died.

These cases may, I think, be considered as exemplifying—1st, A very acute form of syphilitic insanity; 2d, A chronic form, with occasional exacerbations in the severity of the symptoms; and, 3d, A chronic variety, where the mental symptoms, chiefly, though not entirely, depended upon very grave organic change of the nervous centres, leading to an inevitably fatal issue.

It is, I believe, rare that a case so acute, and so rapid in its progress as that of Mr P., the first in the series, is met with. The mental symptoms shown by this gentleman bore to the syphilitic affection, from which he suffered, very much the relation that the head symptoms in many fevers do to the special disorder in the course of which they arise. The mental disorder was very sudden in its invasion. The excitement much resembled ordinary feverish delirium. His delusions were remarkable for their incoherence; and this mental condition was accompanied by a highly feverish condition of the system generally.

These head symptoms bore a very marked relation to the presence of the syphilitic eruptions. They abated as it faded.

One of the most interesting features of this case is the occurrence and nature of the epileptic fits. It is true that epileptic fits frequently occur in more chronic cases of insanity traceable to a syphilitic origin; but in such cases they may be generally accounted for by the presence of nodes or morbid intercerebral changes. In this case, certainly, no such organic change had taken place.

In reference to the occurrence of epilepsy, then, in this case, I would notice that, for some time past, the patient had given the rein to his sexual inclinations. Now, it is subject of remark, that when the sexual instinct is much and strongly excited for a prolonged period, a congested and irritable condition of the medulla oblongata is very likely to be produced. Van der Kolk, when treating of the pathology of epilepsy, remarks:—"From all this" (evidence previously adduced), "I think we have sufficient reason to conclude, that the first cause of epilepsy consists in an exalted sensibility and excitability of the medulla oblongata, rendering the latter liable to discharge itself on the application of several irritants, which excite it, in involuntary reflex movements." And, again, after enumerating several causes, such as onanism, which might produce this *susceptible* condition, he says:—"In the commencement there is only exalted sensibility. If the cause be removed or moderated, the epilepsy gives way of itself, especially if the sensibility is not renewed by remote causes."

He further remarks on an incurable epilepsy followed by incurable dementia, where organic changes have taken place, and continue to give rise to these phenomena.

How well all this applies in the present instance. Here there was no organic change, only an exalted sensibility; when the medulla recovered from this, and as the general excitement passed off with recovery from the syphilitic disorder, the epileptic seizures ceased, and did not return. The convulsive attacks *followed* the paroxysms of mental excitement. I would therefore submit, that probably general excitement was produced first by the stimulation of a brain rendered susceptible by constitutional disease; and that subsequently a further and special manifestation was made by that part of it which had been rendered specially sensitive through the prolonged action of a special irritating cause, *i.e.*, frequent and prolonged sexual excitement.

The result of treatment also in this case is most interesting; and exemplifies, I think, the importance of a non-empirical treatment of mental as of all other disorders. The syphilitic affection, in the course of which the mental symptoms arose, was treated specially with iodide of potash, the general health being at the same time duly regulated. Bromide of potash was also given to subdue the excessive nervous irritability. Under this treatment the patient steadily improved; and I would again draw attention to the close connexion which existed between the mental disorder and the state of bodily health: as the patient recovered from his bodily disorder, he also regained his mental stability. During his convalescence he occasionally underwent slight relapses—more tendencies to excitement than actual outbreaks. He is now perfectly well, and has never since his discharge shown any symptoms of unsound mind.

The second and third cases I have quoted as affording excellent examples of chronic insanity dependent upon a persistent syphilitic condition of the constitution. They differ from each other considerably in the gravity of the symptoms displayed. The insanity of J. B. partakes more of the nature of "dementia;" it belongs, so to speak, to a lower class of insane manifestations than that of Mr M. J. B.'s insanity is not constant, it intermits; and intermits, not only for long periods, but for even days and hours, leaving him in the interval to all appearance sane. Mr M.'s insanity also intermits in severity, but is never entirely absent. At times the manifestations of unsound mind shown by him are more violent and extravagant. He entertains, *when excited*, delusions of an erotic kind, as well as others of a more general nature. He is reported, when at his worst, as being homicidal; but during my experience of his case, his mental disorder has never been such as to produce this latter manifestation.

Again, in these cases, the relation between the syphilitic affection and the display of mental symptoms is of the most direct nature. Both these patients require to be kept well. When "let alone," both —especially Mr M.—become rapidly very insane; but, by the use of iodide of potash and other suitable remedies, they regain their equanimity. J. B. has, I believe, occasionally been treated with mercury in alterative doses. Mr M., since his last admission, has never had mercury. He has many times had exacerbations of his insanity, and has always been rendered comfortable and regained his equanimity on the use of the iodide of potash. Indeed, while under my immediate care, he would frequently beg that the medicine might be renewed, as he felt his feelings of discomfort again gaining the ascendancy. These two persons have, so to speak, become syphilized; they are in a condition in which, at intervals, or more or less constantly, their disease so affects their mental vigour as to render them incapable of rightly adjudicating on the impressions they receive; but when this constitutional condition is combated by appropriate means, they regain altogether, or in a certain measure, their equanimity.

As a parallel instance of this syphilized condition, and the necessity that exists for constant supervision and care in such cases, I would refer to a case reported by Mr Coulson, Surgeon to the Lock Hospital, in his work, "A Treatise on Syphilis." What makes this case interesting, as showing the nature of the influence exerted by the bodily disease in producing insanity, is the fact that here exacerbation of the syphilitic disorder produced an extremely susceptible, irritable condition of the general nervous system, but did not produce special symptoms of *mental* disorder, probably because, in the present instance, the brain was not so disposed to derangement of its functions as in the cases just related. The case is as follows: Mr Coulson had under his care a gentleman suffering from syphilitic sarcocele; he was treated with iodide of potash, and recovered. I give the rest of the case nearly in Mr Coulson's own words. "A few months after he got married, but continued to take the remedy, by my advice, once a day for some time. The gentleman had attempted to leave off the medicine, but shortly was obliged to return for further advice." On the first attempt he discovered that his general health began to decline. Two or three months afterwards, he became weak, his appetite failed, he lost weight, and night sweats ensued. As he lived in the country, he resumed the iodide without consulting any medical man; the appetite at once improved, and he quickly recovered his usual health. "He repeated the same experiment" (left off the iodide), "but under the advice of a physician, who ordered him to go to the seaside, and to take quinine with iron. The change of air and of treatment was not attended by the result expected. The symptoms already described began to manifest themselves again, and the patient was again compelled to resume the iodide." This case affords, I think, another excellent example of a man who required "to be kept well." He did not betray any mental symptoms of a gravity to be considered as indicative of insanity, but in other respects his case presents a close analogy to those already mentioned. This would indicate that the effect of such a constitutional affection is in great measure predisposing; it acts, more especially at least in the chronic forms, by producing a state of mind predisposing to insanity, although it may undoubtedly also influence in great measure the nature of the manifestations displayed.

To complete the series, I shall beg leave very shortly to refer to the last case, that of Dr Williams.

This case would appear to belong to another category than that which claims the first three. The very grave symptoms of this case depended upon organic intercerebral change. During the patient's residence in the asylum, she bore the well-marked evidence of syphilitic affections, both of the secondary and tertiary type; she had secondary eruptions, and also condylomata on the labia, with a very offensive discharge from the nose, which had been present for some months. Her head symptoms also presented a curiously mixed character. On admission, she was melancholic and apathetic, but could at first be roused; then gradually symptoms of a very grave nature supervened. She became affected with severe headache, vertigo, and drumming in the ears, and had several epileptic seizures. Symptoms of a more acute character occasionally showed themselves; she is reported as becoming excited, and again as being more composed. The eruption, which had at the time of occurrence of the more acute symptoms made its appearance, again disappeared.

Finally, the symptoms dependent upon incurable organic change (cerebral softening, etc.) increased in severity, and the patient died in a state of coma.

On post-mortem examination, various patches of softening, gummy tumours, and other recognised appearances of advanced organic change depending upon syphilis, were found in the brain and its membranes. When the changes caused by a syphilitic affection are so grave as those in this case, nothing, of course, can be hoped for as the result of treatment beyond the amelioration of the patient's condition.

The above is interesting, under the circumstances of the present paper, as completing the series with an example of a case utterly beyond the power of physic to cure. The symptoms of such a case at once preclude hopes of recovery—an important distinction, because a false diagnosis as to the possibility of recovery is apt to throw discredit on a mode of treatment which may be of the greatest avail in cases of a less hopeless nature.

I would, in conclusion, submit that the foregoing cases show—

How the impairment of the general constitutional stability by syphilis, as by any other disease, may produce such a state of mental incompetence as to occasion insane manifestations.

That it is of the greatest importance to distinctly diagnose the true cause of the insanity, in order that an availing method of treatment may be resorted to.

That the patient's natural disposition, and the special nature of the exciting cause, exercise a determining and suggestive influence as to the form of insane manifestation displayed by him.

And, finally, that in those cases where the bodily disorder is acute, and the constitution not too severely affected, a complete recovery of the mental powers is to be hoped for on the disappearance of the syphilitic disease; while, in many chronic cases, such as the second and third of the series, where such a result cannot be hoped for, a comparative immunity may be procured for the patient from his more distressing mental symptoms by judicious treatment; but to this end a constant medical supervision is necessary.

In cases such as the last of the series, hopeless as they may be in regard to a re-establishment of the mental powers when great structural changes have occurred, much may be done to ameliorate the patient's condition and mitigate his sufferings.

ARTICLE VIII.—*On the Treatment of Dilatation of the Stomach by the Method of Kussmaul; with Cases.* By J. O. AFFLECK, M.D., Assistant to the Professor of Medical Jurisprudence in the University of Edinburgh.

(*Read before the Medico-Chirurgical Society of Edinburgh, 3d April.*)

TO modern clinical and pathological investigation we owe much of our present knowledge respecting the diseases to which the stomach is liable. In the diagnosis of many of these diseases special difficulties have always been felt, in consequence of the strong resemblance, as regards symptoms, of morbid states of the organ, which, in their real nature, differ widely from each other. Hence, no doubt, the term "dyspepsia" came to be applied to a large and ill-defined class of affections of the digestive system—among which, however, recent inquiries have succeeded in identifying some important diseases of the stomach. Much is still to be desired in the way of an accurate classification of gastric diseases, as upon this, in large measure, must depend their rational and effective treatment.

The morbid condition known as dilatation of the stomach has been long recognised, and its causation pretty well determined. Without reference to those very rare instances of its occurrence, apart from any evidence of previous affection of the stomach, by far the greater number of cases which come under observation owe their origin to some form of disease which has resulted in a stricture of the pyloric orifice. Such stricture may be produced in various ways; as, for example, by the pressure of tumours, by thickening of the tissues of the stomach around the pylorus, due either to cancerous growth or to simple induration, the result of chronic catarrh; or, again, the pyloric orifice may be narrowed in consequence of the cicatrization and puckering of ulcers seated in its immediate vicinity, and this appears to be the cause of a large proportion of the cases which come under our notice. Although, then, dilatation of the stomach may be regarded less as a distinct disease than as one of a series of morbid phenomena or results arising from some pre-existing lesion, it yet presents features peculiar to itself, and requires treatment irrespective of its associations. When from any cause a stricture of the pylorus has occurred, and as yet no increase in the normal size of the stomach has taken place, it might be held that a condition analogous to dilatation of the organ has already been established, since the proportion between its cavity and its outlet has become changed. But it is only for a short time that the parts can remain in this relation, and results more positive very speedily arise. To overcome the obstacle presented to the transmission of its contents, the stomach must, if possible, act more powerfully, and, in some rare instances, it proves equal to the demand by a compensating hypertrophy of its walls. Most commonly, however, it is otherwise, and dilatation, without or with little hypertrophy, occurs—a result to be ascribed not merely to the distension of the organ by the mass of its contents detained for an undue length of time in its cavity, but also to the debilitated state of the walls of the viscus by previous or existing disease. This state of dilatation may exist, as is well known, to an enormous extent, and the outline of the stomach may be traceable over the whole front of the abdomen, causing the hepatic dulness to disappear, and extending as far down as the pubes. Although no constant relation has been found to exist between the degree of constriction of the pylorus and the extent of dilatation of the stomach (for the pyloric orifice may be but slightly contracted while the cavity of the stomach is largely dilated), yet it is certain that the wider the organ is expanded the less muscular power it will possess for the propulsion of its contents. The consequence is, that only a small portion of the food taken passes into the duodenum, the greater bulk being retained in the stomach, where, in circumstances the most favourable, it speedily undergoes putrefactive and fermentive changes, attended with the formation of various gases and acids, and the abundant development of torulæ and sarcinæ. This decomposing mass is highly irritating to the surface of the stomach, and appears to induce a state of chronic catarrh, accompanied with the abundant secretion of a vitiated mucus which still further increases the existing evil.

The symptoms to which this state of things gives rise are of the most severe character. As the stomach becomes distended with its putrefying contents, violent pain and heartburn, attended with foul eructations, begin, and soon the distress of the patient becomes extreme. Vomiting either comes on spontaneously or is induced by the patient himself tickling his fauces. The quantity vomited is usually very large, and consists of brown-coloured, offensively-smelling, and strongly acid matter, the decomposing food and mucus already described. Upon the surface a pellicle or froth collects, in which may be detected, on microscopic examination, torulæ and sarcinæ in abundance. The vomiting affords but partial and temporary relief, for the attacks of pain and heartburn recur at longer or shorter intervals, frequently within a few days, and again the stomach has to be emptied. The effect upon the patient is most marked. He becomes emaciated and anæmic—in fact, he undergoes a kind of slow starvation, while at the same time he becomes a prey to extreme despondency respecting his condition. His strength slowly declines, his limbs become œdematous, and, although life may be protracted for years, he ultimately dies of inanition. In most cases there is obstinate constipation, and the urine is much diminished in quantity, alkaline, and loaded with phosphates.

The treatment of this malady has received considerable attention, and many varied remedies have been suggested for its alleviation—its cure being generally held to be unattainable. Some physicians, having regard to the enfeebled state of the organ, and its diminished power of digestion, have sought to meet the indications for treatment by administering food in the smallest possible quantities consistently with the maintenance of life. This method, which is eminently a rational one, is occasionally followed with marked benefit when it can be rigorously carried out, which, however, is but seldom; for, to say nothing of the difficulty of ascertaining the exact amount of aliment capable of being digested, and keeping within this limit, there is the more formidable one of securing the patient's submission to this severe regimen for a length of time, without which, of course, the object in view is defeated.

Another plan of treatment, also occasionally beneficial, is that of placing the patient upon a diet of animal food, as being less likely to undergo the acid fermentation to which farinaceous food is liable, and, at the same time, more readily digestible in the stomach. With this view beef-tea, pounded meat, and even preserved meat, have been recommended and used with good effect. Further, efforts have been directed to the prevention or arrest of the fermentive processes by the administration of antizymotics, amongst which may be mentioned as of apparent value sulphurous acid, the alkaline sulphites and hyposulphites, chlorine water, creosote, etc.; and, whatever the nature of its action, there is no doubt that the green iodide of mercury often proves highly beneficial in cases of sarcinous vomiting.[1]

It must, however, be admitted, that the various remedies now mentioned have little more than a merely palliative effect, and the disease has come to be generally regarded as intractable.

In 1867, Professor Kussmaul, of Freiburg, brought forward[2] the method of treating this disease which has since received his name, and which has proved to be of signal efficacy. It consists in the employment of the stomach-pump for withdrawing the fermenting and irritating contents of the stomach, and for washing out the organ with some mildly alkaline solution. Convinced that the continual distension of the stomach by the mass of its undigested contents entailed a state of exhaustion of its muscular coats in their ineffectual propulsive efforts, while it tended directly to increase the dilatation of the organ, and to maintain a constant state of irritation or catarrh, Kussmaul perceived the prime indication to be the removal of this distension. The case which first led him to employ this ingenious device was that of a female, aged 25, who had long suffered from dilatation of the stomach, probably depending on an ulcer near the pylorus, who had daily attacks of severe pain and vomiting, and had become greatly emaciated. After the employment of the usual medicinal and dietetic remedies without success, it occurred to Kussmaul that if the stomach could be thoroughly emptied, which he observed was never accomplished by the most severe vomiting, its walls might be restored to a condition of health, and its dilated cavity be reduced. After passing the stomach-tube and completely emptying the stomach, Vichy water was pumped in and drawn out again, and thus the organ was well washed out. For two days there was complete relief, and on the reappearance of the symptoms the process was repeated and continued at intervals of two or three days. In a fortnight there was a most striking improvement in her whole condition. The evidence of dilatation of the stomach could be no longer recognised. In two months she had gained 15 lbs. in weight; in six months 23–24 lbs., and soon became quite well. At the end of two years there had been no return of her former symptoms.

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[1] The consideration of the much-discussed question of sarcinæ does not belong to a paper such as this. Among the most recent views entertained on the subject are those of Dr Ferrier, who, as the result of his investigations, holds sarcinæ to be a constant occurrence in the blood of man and the lower animals; and those of Professor Bastian, who believes sarcinæ to be of the nature of concretions, and capable of being developed not merely in the blood but likewise in certain saline solutions. (*Vide* Brit. Med. Journal, 27th Jan., and 4th Feb. 1872.)

Although the presence, in great quantity, in the stomach, of sarcinæ is a very frequent occurrence in cases of stricture of the pylorus, yet their occasional absence in well-marked examples of that disease seems to show that they bear no necessary relation to it, nor require any special treatment apart from that of the condition in which they occur.

[2] At the "Versammlung Deutscher Naturforscher und Aerzte," held at Frank- in September 1867.

This case was followed by several others of a similar nature in Kussmaul's clinique, where the same method was adopted, with, in some instances, complete cure, and in others with such a mitigation of the symptoms as had not been achieved by any other treatment previously employed.[1]

This plan was received with general favour in Germany, and was employed at various hospitals with marked success. In this country the observations of Kussmaul, and others who have followed his treatment, have been brought under notice by Professor Cuming, of Belfast,[2] but nevertheless the method appears to have been little employed here.

In the two following cases recently under treatment in Ward VI. of the Royal Infirmary (under the care of Prof. Maclagan), I had an opportunity of employing and noting the results of Kussmaul's method:—

Case I.—Robert J., æt. 36, engine-driver, residing in Glasgow, was admitted to the Infirmary on 3d August 1871, complaining of frequently recurring attacks of vomiting accompanied with severe heartburn and pain in the stomach. The note sent by his medical attendant stated that he was suffering from symptoms of stricture of the pylorus.

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[1] Ueber die Behandlung der Magenerweiterung durch eine neue Methode mitteltst der Magenpumpe; von Dr A. Kussmaul. Deutsches Archiv für Klinische Medicin, Dec. 1869.

[2] Dublin Quarterly Journal of Medical Science, Nov. 1870.

The patient states that for above a year he had suffered from a weak stomach, his food often disagreeing with him; but that about eight months ago he began to be troubled with foul eructations after meals, accompanied with severe pain, and ending in two or three days with vomiting. He would vomit three times in the course of one day, then there would be an intermission of three or four days, when the vomiting again came on. The vomited matter was dark-coloured, intensely sour, and had an offensive smell. There was always severe burning pain in the epigastrium before vomiting. He had never at any time observed blood in the matter vomited. He tried to live on the lightest diet he could think of, but with no effect; and under the constantly returning attacks of pain and sickness, he became so weak that he had to cease working in the end of January, since which time he had been more or less under medical treatment.

His previous health had been always good and his habits temperate. Had not been a great eater. Family history good.

Present Condition.—Patient is 5 ft. 10 in. in height, of large frame, but emaciated. His weight is 9 st. 4 lbs. Complexion sallow, and aspect dejected.

Nothing abnormal could be discovered in the thorax.

Digestive System.—Tongue coated with a brownish fur; appetite bad; no thirst; bowels irregular, being for the most part much constipated. On inspection, there is in the epigastric region, when patient is in the recumbent posture, slight bulging, which extends below the umbilicus when he stands. On palpation there is no tumour nor any tenderness in the epigastrium. The abdominal parietes are soft and thin, and on pressure with the hands fluid can be felt passing across the abdomen superficially as if within a distended stomach. On percussion, the whole front of the abdomen is tympanitic, and the hepatic dulness is diminished.

Genito-urinary System.—Urine about 30 ounces; sp. gr. 1031; slightly alkaline, deposits phosphate of lime on standing.

Nervous System.—Sleeps badly; no headache; very desponding as to his hope of recovery.

Diagnosis.—Pyloric constriction and dilated stomach.

Prognosis.—Doubtful.

Treatment and Progress.—*5th Aug.*—Patient vomited a large amount of most offensive brown-coloured material, with a thick froth on its surface. This on microscopic examination showed great quantities of sarcinæ ventriculi and torulæ. Ordered the rice diet of the hospital, consisting largely of milk; also acid. hydrocyan. ♏ij., in half an ounce of lime-water thrice daily, and a pill containing gr.j. of the green iodide of mercury thrice daily.

10th.—For past five days has not vomited, and feels somewhat better.

12th.—Suffering from epigastric pain, and vomited some sarcinous matter. As his gums were slightly affected, the pills were discontinued. Urine reduced to 20 oz. in the twenty-four hours.

17th.—Again vomited a large quantity of the same material as before. The smell of the vomit is so offensive, that the other patients complain that they can scarcely remain in the ward. Ordered ten-grain doses of the hyposulphite of soda thrice daily.

19th.—Vomiting still continues; the dose of the hyposulphite of soda increased to 30 grains, and a teaspoonful of pepsine wine to be taken with his food.

25th.—To-day patient again vomited largely.

29th.—Had another severe attack of vomiting last night. Ordered gr.x. of bismuth to be taken with ♏ij. of hydrocyanic acid in mucilage every four hours.

8th Sept.—For eight days patient kept free from vomiting till last night and to-day, when it returned as severely as before. He is extremely desponding, and has become much weaker of late, his weight being only 9 stone.

9th.—To-day the stomach-tube was passed, and the contents of the stomach pumped out, tepid water being also thrown in and drawn off again, so as completely to empty the organ. Then about 16 oz. of aerated potash water were run in by attaching the syphon bottle to the end of the stomach-tube,[1] and the greater part drawn out again, a little being purposely left to remain in contact with the stomach. Patient felt considerable relief after this.

10th.—Very slight vomiting to-day.

11th.—Stomach-pump used as before, except that Condy's fluid was added to the tepid water to keep down the fetor.

14th.—The treatment continued. Has not vomited for four days, and feels better. Has not slept so well since he became ill, as he did last night.

25th.—The stomach-pump continues to be used daily. The patient never vomits now; he eats well, is cheerful, and feels in every respect better than he has done since he took ill; can now take a long walk; has gained 6 lbs. in weight within a fortnight. The contents of the stomach still show sarcinæ. His urine is still scanty, and his bowels constipated.

2d October.—Treatment continued as before, except that a weak solution of bicarbonate of soda has been substituted for the aerated potash-water. Never vomits, and is still gaining weight.

9th.—The stomach-pump is still employed daily. Sulphurous acid is used with the tepid water instead of Condy's fluid. No vomiting; and very few sarcinæ are now to be observed in the contents of the stomach. He now weighs 9 st. 13 lbs., being a gain of 13 lbs. since the stomach-pump was resorted to a month ago. Urine now between 30 and 40 oz. daily. Bowels moved only by laxatives. Takes the bismuth mixture occasionally. The improvement in his condition, bodily and mental, is very marked, and he is daily gaining strength.

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[1] The suggestion of one of the clinical clerks, Mr J. M. Brown, who, along with Messrs Donald, Robertson, and Huggins, the other clerks, rendered great assistance in carrying out the treatment.

16*th.*—Improvement goes on rapidly; weight 10 st. 3 lbs. Says he never felt better in his life. Treatment as before.

19*th.*—Patient is now so well that he is to-day dismissed to the Convalescent House, with instructions to call every second day at the Infirmary, that the stomach may be pumped if necessary. No sarcinæ can now be seen in the contents of the stomach withdrawn by the pump.

21*st.*—Came in to-day. Continuing better.

26*th.*—Did not come in again till to-day, feeling so well. Stomach-pump used, but patient thinks it is now unnecessary. Appetite ravenous, and bowels now move without medicine.

9*th November.*—Dismissed to-day, feeling quite well. His weight, taken before he left, was 10 st. 7 lbs.

About a month after his return home, he wrote, stating that he still continued to improve, and that he had provided himself with a stomach-pump, which he used occasionally.

On 17th January last, in answer to my inquiry, he wrote, stating that he was now as well as ever he had been in his life; that he had not required to use the stomach-pump for more than a month, and could now eat anything; also, that he had returned to his full duty as an engine-driver. On the following day, he came into Edinburgh and called at the Infirmary. He has the appearance of perfect health, and now weighs 11 st.; is never at all troubled with his stomach. In the end of March, I again inquired for him, and he wrote to me in exactly similar terms to the above, stating, also, that he could do both day and night duty, and that his weight still kept up to 11 st.

CASE II.—Alexander E., æt. 42, farm-labourer, East Lothian; admitted to the Infirmary on 11th August 1871, complaining of frequent fits of severe pain in the stomach, acidity, vomiting, and great loss of strength.

This patient dates the commencement of his illness as far back as ten years ago, when he suffered much from burning pain in the stomach, unaccompanied with vomiting. This gradually wore away. About three years subsequently, he was again laid up with the same symptoms; but on this occasion there was severe vomiting, for which he was under treatment for a short time in the Infirmary. The symptoms gradually subsided, but recurred about three years later, and again in the autumn of 1870. On one occasion, the vomit was said to have contained blood. During the intervals of the attacks, he enjoyed, he states, tolerable health, but was not so strong as before his stomach complaint began.

His present attack commenced about two months previous to his admission, with severe burning pain in the stomach, partially relieved by vomiting, which occurred at irregular intervals of a few days, the vomited matter being sour, black-coloured, and frothy.

The patient is a tall, feeble-looking man, very anæmic and emaciated. His pulse at the wrist is almost imperceptible.

Digestive System.—Appetite bad; tongue clean; complains of a burning pain about the ensiform cartilage, extending to the right and left of this spot. There is tenderness, on moderate pressure, over the epigastrium. The stomach can be made out as extending over nearly the whole front of the abdomen. Its contour, when distended with food or fluid, can be traced distinctly in the hypogastric region. On palpation, a splashing sound is heard through the thin abdominal parietes, resembling that elicited on pressing a half-filled water-cushion. The hepatic dulness is almost obliterated. Bowels intensely constipated.

Genito-urinary System.—Urine about 30 oz.; neutral; no albumen; sp. gr. 1012.

Nervous System.—Sleeps badly; is listless and low-spirited.

Diagnosis.—Gastric ulcer; stricture of pylorus and dilatation of stomach.

Prognosis.—Unfavourable.

Treatment.—On admission, was ordered—℞ Acid. hydrocyan. dil., ʒss.; bismuth. subnit., magnes., āā ʒij.; glycerin., ℥i.; aquam ad ℥vi. M.—Sig. ℥ss. ter die; and, on the following day (12th August), a pill containing 1 grain of green iodide of mercury, and one-third of a grain of opium, thrice daily; also rice diet.

15th August.—Vomited a large quantity of dark-coloured, intensely acid, and frothy matter, in which a few blood-clots were observed. Torulæ and sarcinæ were detected in great abundance.

25th.—Rather better. No vomiting for past ten days. He is, however, extremely weak, and œdema of feet and ankles has recently appeared.

30th.—Still free from vomiting, but no increase of strength. Œdema of feet continues, and there are now profuse nocturnal perspirations.

1st September.—Has had diarrhœa, which was checked by pil. plumb. c. opio.

8th.—Suffering from epigastric pain. Vomited to-day. The medicines continued.

12th.—Severe epigastric pain continues, and causes him to lie on his face, with his knees drawn up. Vomited yesterday an enormous quantity of dark-coloured sarcinous matter. Urine diminished to about 15 oz. in twenty-four hours; alkaline, and depositing phosphates. Ordered ten-grain doses, thrice daily, of ferri et ammon. citr.

14th.—Vomited again to-day, and is suffering great pain in the stomach.

19th.—Passed a very bad night, and to-day vomited an immense quantity. He is fast losing strength, and is almost wholly confined to bed.

24th.—No vomiting for five days, but heartburn and pain has again begun.

26th.—Yesterday and to-day the stomach-tube was passed, a little water containing sulphurous acid injected in, and withdrawn along with the contents of the stomach. A weak solution of bicarbonate of soda was then used to wash out the stomach, as in Case I. Patient felt relief on both occasions, and has slept better.

2d October.—To-day traces of blood were observed in the contents of the stomach withdrawn by the pump.

16th.—The stomach-pump continues to be used daily. Patient looks better, and feels stronger. His weight, however, still remains the same—scarcely 10 st.

7th November.—Feels decidedly better, and is much improved in spirits. Stomach-pump continued daily.

23d.—Progressing favourably. Has occasional attacks of heartburn, and has vomited once during the past month; but he obtains instant relief on the application of the stomach-pump, which continues to be used daily. Never has the attacks of pain he had before; is cheerful, and can take a long walk. Feels stronger than for many months before his admission. No increase in weight, and urine still scanty.

21st December.—The treatment by the stomach-pump continues to be followed with good effect, the patient's whole appearance betokening improvement. Has lost his anæmic look, and the œdema of his ankles is gone. No pain nor uneasiness about the stomach; eats and sleeps well. Weight continues the same. Urine now about 40 oz.; alkaline. Bowels very constipated.

11th January 1872.—Feels so well that he is desirous of returning home, as he thinks the country air would completely restore him.

1st February.—About the time the patient was to have returned home, he was seized with a severe attack of erysipelas of the face and scalp, which caused him much pain, and greatly reduced his strength. During the continuance of the erysipelas, did not suffer from his stomach, but he was taking very little food.

12th.—Has had a second attack of erysipelas. During the whole time, on this as on the last occasion, the gastric symptoms have remained in abeyance.

3d March.—Has been slowly recovering strength since the last attack of erysipelas. The stomach-pump has now to be used only once in four or five days, and much less is brought up from the stomach than ever before. Sarcinæ still to be found.

16th.—Has greatly improved within the last ten days; can go out and walk about as well as before the attacks of erysipelas. Is now passing about 60 oz. of urine, of light specific gravity. Is evidently digesting his food, as he has no feeling of distension after ating, and the stomach-pump has not been required for a fortnight. to return home in a week.

18th.—Felt some acidity to-day. Stomach-pump used, but was accidentally broken in working. He then vomited a considerable quantity.

23d.—Has vomited once or twice since last report, the stomach-pump not being at hand, but to-day feels much better. Has procured an instrument for himself, to be used at home. In accordance with previous arrangements, he left the Infirmary to-day.

30th.—As he had not left town, I called on him to-day, and found him continuing better. Has been free from pain and vomiting for ten days. His urine continues abundant.[1]

These two cases differ in many respects from each other, but they correspond in one point—viz., the evidence each gave of the presence of a stricture of the pylorus, with resulting dilatation of the stomach.

In the first case there was no good ground for believing that the patient had suffered from gastric ulcer, the whole history of his illness corresponding rather with that of a chronic gastric catarrh, which had caused thickening of the tissues in the neighbourhood of the pylorus. However distressing and urgent the symptoms in this case were—and they were sufficiently so to make the prognosis an uncertain one—yet the fact of the recent development of the disease still warranted the hope that the muscular structure of the stomach had not become so exhausted by distension as not to recover tone when the pressure was removed—a view amply confirmed by the result. The evidence of the restoration of normal digestion and absorption in the marked gain in weight, the regulated condition of the bowels, and the increased secretion of urine, proved that, to a great extent, the stomach had recovered its propelling power, and its mucous membrane been restored to a condition of health. And it is to be observed that this improvement dated from the time that the treatment by the stomach-pump was begun, previous to which no amendment had taken place. Had anything further been wanting to demonstrate the benefit derived from the treatment, it would have been furnished in the complete restoration of the patient's mental health.

The second case was a much less promising one than the first, owing to the long duration of the disease, the extent of dilatation of the stomach, the evidence of ulceration, existing as well as past, and especially to the state of exhaustion to which the patient was reduced. On this account, some hesitation was felt in resorting to the method of Kussmaul with him. Notwithstanding this, it is certain that here, too, the use of the stomach-pump was soon followed by a marked amelioration in the more urgent symptoms;

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[1] He returned to the country soon after this, and on 22d April he wrote to me, stating that he continued better, having had no vomiting, nor any occasion to use the stomach-pump, since he left Edinburgh. His weight (which was reduced to 9 st. 2 lbs. after the erysipelas) is now 10 st. 5 lbs.

and while the result was less satisfactory than in the former case, there is no doubt that by this means the patient's life was preserved and rendered capable of being maintained in comparative comfort. From the long duration of the symptoms, and the enormous expansion of the stomach, there was reason to fear that in this case the muscular structure of the organ had become so impaired by atrophy or degeneration as to exclude the hope of a cure. Cases of a similar nature are recorded by Kussmaul, who regards them as among the incurable forms of the disease, but nevertheless capable, many of them, of decided benefit under his method of treatment. In the case of E., the evidences of improvement under this treatment were sufficiently marked to hold out the prospect of still further amendment by perseverance in its employment. Among these evidences, great importance is, I apprehend, to be attached to the restoration of the urine to its normal quantity and character, as indicating that the mucous membrane of the stomach was in a healthier condition, and able to absorb fluid to a much greater extent than before.

To state, then, briefly, the advantages of this plan of treatment:—It cannot remove a stricture of the pylorus: its action is essentially upon the muscular structure and mucous membrane of the stomach. The complete removal of the contents distending its cavity, which can only be effected by mechanical means, enables the muscular coat of the organ to recover its contractile power, just as the use of the catheter in certain cases of retention of urine is followed by a similar result; while the subsequent application to its mucous membrane of the mildly alkaline solution subdues the state of catarrh.

The cases most favourable for its employment are manifestly those of recent development where no great change of structure has had time to occur. And yet a reference to the large experience of Kussmaul,[1] of Niemeyer,[2] and of others who have used this method of treatment, will furnish several instances of complete cure in cases of many years' duration, where all the signs and symptoms were present in the most aggravated form. Further, in the most hopeless cases, as for instance in cancerous stricture of the pylorus, marked relief has been derived from the employment of the stomach-pump.[3]

Some objections to this method of treatment can only be very shortly noticed. The annoyance connected with the passing of the stomach-tube is a practical difficulty of considerable weight, and there can be no doubt that, in the case of some sensitive persons, it would be sufficient to deter them from submitting to the treatment. With most, however, no unpleasantness is felt after the first or second passing of the instrument, and they cheerfully submit to what they feel procures them so much relief. In the above two cases no difficulty was experienced from this source, and soon each patient came to pass the tube for himself with greater facility than it could be done for him. Again, the risk of injuring the stomach by sucking in a portion of its mucous membrane into the orifice of the tube, has been mentioned as an objection to the plan. This, however, is but a doubtful source of danger, and could scarcely occur unless an unwarrantable amount of force were employed in working the pump. Particular attention was directed to this in both the cases now narrated, but on no occasion was the operation followed by pain, or any indication of local injury, but, on the contrary, always with relief. To obviate, however, any such evil, as well as to simplify the operation, it has been proposed to substitute for the pump an adaptation of the syphon principle. This modification of Kussmaul's method was first brought into notice by Professor Jürgensen of Kiel,[1] and a special instrument for the purpose was devised by Dr Rosenthal of Berlin.[2] This syphon arrangement has now, on the Continent, to a large extent replaced the use of the pump in emptying and washing-out the stomach. While it may be doubted whether it accomplishes the object as effectually or as expeditiously as the pump, it has decided advantages to the operator, and is exceedingly simple in its application. The principle, however, is precisely the same in both. Lastly, it may be objected that the treatment by Kussmaul's method, while applicable enough in hospital practice, can scarcely be carried out in private. The two cases now narrated furnish a sufficient answer to this. Both the men of their own accord procured stomach-pumps for themselves, and had them used at home—a proof, it may be further remarked, of the value they set upon the treatment, as well as of the benefit they had derived from it.

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[1] Kussmaul, loc. cit.

[2] Berliner Klinische Wochenschrift, 3d January 1870.

[3] Do., loc. cit. Dr Wm. Pepper of Philadelphia, quoted in "New Reme-" for July 1871.

In submitting these two cases to the notice of the Society, I venture to hope that they may be not without interest as additional testimony to a method of treatment the value of which has already been well established. Without unduly estimating that value, and still less depreciating other remedial measures, the treatment now described offers more successful results than had hitherto been obtained in dealing with this formidable malady, and may be justly claimed as an important advance in the therapeutics of gastric diseases.

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[1] Deutsches Archiv f. Klin. Med., 1st April 1870.

[2] Figured and explained in Berliner Klin. Woch., 13th June 1870.

Part Second.

REVIEWS.

A Dictionary of Chemistry and the Allied Branches of other Sciences. By HENRY WATTS, B.A., F.R.S., F.C.S., etc. Supplement. London: Longmans: 1872.

THIS supplementary volume fully sustains the high character of Watts's Dictionary as a trustworthy record of chemical facts and opinions; and the English chemist has now, in the comparatively small space of six thick octavo volumes, a succinct and, generally speaking, accurate account of everything known in chemistry down to the end of the year 1869, along with the references necessary for the verification of each abstract, and for obtaining full details of each investigation.

These six volumes serve two distinct purposes: first, they form a book of reference for those who do not require more than the condensed and abstracted notices which it contains; and, secondly, they form an index to the enormous mass of original research, the detailed records of which are scattered through numerous journals and publications of learned societies.

The labour of collecting these scattered materials, of comparing and condensing them, is of course very great, and the highest credit is due to the editor, who has himself written a large part of the book, and to the various contributors who have assisted him, for the remarkable rapidity of publication, and for the general correctness of the abstracts.

We have said that the rapidity of publication is remarkable. This will be best seen by comparing it with the rate of publication of its great prototype, the German "Handwörterbuch der reinen und angewandten Chemie." The first volume of Watts's Dictionary was published in 1863, and the fifth (completing the work of which the volume before us is a supplement) in 1868,—the whole Dictionary from A to Z being published in five years. The first volume of the "Handwörterbuch" appeared in 1837, and the ninth and last in 1864,—twenty-seven years being thus occupied by the publication of the entire work. It is, however, only fair to state, that, by the publication of a second edition of the first two volumes, the interval between the oldest and newest articles in the Handwörterbuch is greatly reduced. Thus, if we form one book of the second edition of vols. i. and ii., and the first edition of the remaining seven, the oldest volume is vol. iii., 1848, and the most recent, vol. ix., 1864—reducing the entire period to sixteen years, ainst five in the case of Watts's Dictionary.

The advantages of rapidity of publication are obvious. It is of course in the highest degree desirable that such a book should all belong to one epoch, that views adopted in the first volume should not be matters of antiquarian curiosity at the date of the last, and that nomenclature and notation should not undergo fundamental changes from volume to volume. Even Watts's Dictionary has not been published fast enough to avoid altogether the evils just mentioned. Thus, in the article "Atomic Weights," objections are stated to the large atomic weights proposed for certain metals by Cannizzaro, and a table is given in which *only* the small atomic weights of these metals appear. Accordingly, in the early part of the alphabet (Aluminium, Barium, Cadmium, Calcium, Chromium, and Cobalt) only the small atomic weights are mentioned. With Copper we begin to find the large atomic weight mentioned, but only used in formulating the cuprous compounds; with Iridium and Iron we arrive at a stage where both systems are used throughout; this lasts as far as Nickel; from Osmium onwards to Zinc, the new system (that of Cannizzaro) is exclusively used. Thus, the compounds of Barium and Cadmium are formulated in a totally different way from those of Strontium and Zinc, and the comparison of these series of perfectly analogous compounds is rendered impossible, except for those who are acquainted with the history of the revolution which took place between vol. i. and vol. iv. The opportunity of explaining these discrepancies given by the publication of the Supplement has unfortunately not been taken advantage of. In the Supplement the new system is used without explanation.

Such cases are rare, and their more frequent occurrence has only been avoided by rapidity of publication. This has, however, led to a blemish of another kind, which we think it is right to notice. A compilation or condensation of the nature of the "Dictionary" ought to be compiled and condensed *from the original materials*, not from previous compilations or abstracts; these should be used as indices only.

The articles in the "Dictionary" contain internal evidence that in many cases the original materials have been used, but there are frequent indications of second-hand reference, and of research not extending beyond the "Jahresbericht" or the "Handwörterbuch." These are, no doubt, generally trustworthy sources of information, but the repetition of the abstracting process introduces a considerable risk of error.

The book is, on the whole, so good, and so useful and popular, and the Supplement is so sure to add to its usefulness and popularity, that we have felt impelled to pick a few holes in it. Notwithstanding the flaws, which we flatter ourselves that we have, after diligent research, succeeded in detecting, we cordially recommend the "Dictionary" to all who wish either a handy book of reference, or a means of referring to original papers.

A Treatise on Diseases of the Nervous System. By WILLIAM A. HAMMOND, M.D., etc. New York: D. Appleton and Co.: 1871. Pp. 754.

Studies on Functional Nervous Disorders. By C. HANDFIELD JONES, M.B. Cantab., F.R.S., etc. London: J. Churchill and Sons: 1870. Pp. 839.

Dr HAMMOND'S work is based mainly on his own observations and experience, and conveys also his own views, which differ in some respects from those of others. It is, however, none the worse for this, for even erroneous views distinctly uttered lead to inquiry and consideration, and are for this reason often of more importance for the advancement of medicine than an unmeaning and parrot-like repetition of the actually more correct views of previous observers. Brevity and explicitness are the characteristics of this volume, which has no pretensions to be an exhaustive treatise on the subjects contained in it. But with all this conciseness, it is the most complete treatise on diseases of the nervous system in the English language, and its very brevity makes it all the more applicable to the wants of the practitioner, for whose use also the clearness as to points of diagnosis and the explicit directions for treatment still further recommend it.

The introductory chapter describes the instruments and apparatus employed in the diagnosis and treatment of nervous disorders, and the rest of the work is divided into five sections, which treat successively of diseases of the brain, of diseases of the spinal cord, of cerebro-spinal diseases, of diseases of nerve-cells, and of diseases of the peripheral nerves. When so much is attempted in so short a space, it is of course needless to expect all the articles to be of equal value. The chapter on Neuralgia, for instance, might almost as well have been wholly omitted; it is meagre in the extreme, and its directions for treatment too brief to be of any but the most trifling value. Again, however satisfactory it may be to find insanity duly recognised as a symptom of nervous disease, the chapter on it, too, is so bald as to be of neither scientific nor practical value. Nevertheless, as a comprehensive treatise on nervous disorders in small bulk, this work deserves to find a place in the book-shelves of every practitioner, and much useful information will be found in it which is otherwise unattainable without wading through a great deal of literature of a cumbrous quality.

Dr Handfield Jones's first edition has already been favourably noticed in this Journal (Nov. 1864), and we gladly welcome a second edition, which, however, has unfortunately greatly increased in size. It is full of valuable practical information, and its physiology and pathology, we need not add, are quite abreast with modern advances of these sciences.

The Origin of Cancer, considered with reference to the Treatment of the Disease. By CAMPBELL DE MORGAN, F.R.S., Surgeon to the Middlesex Hospital. Reprinted in part from the *Lancet.* Pp. 88. J. and A. Churchill: London: 1872.

THIS is a very interesting and most thoughtful tractate on a most important subject. Dealing rather with principles than with details, it is meant to stimulate thought and evoke discussion rather than merely to dogmatize or convey information.

The special opportunities given to the surgeons of the Middlesex Hospital for the study of cancer in all its stages, by the special cancer wards of that institution, have borne noble fruit in the pathological papers, not only of Sir Charles Bell, but of Moore and De Morgan in later times; and it is encouraging to find the teaching of this school ascribing a local origin to cancer, and that, notwithstanding the constant presence in their wards of exceptionally severe and incurable cases of cancer, the surgeons of the Middlesex still hold that, in its early stage at least, cancer is a local disease.

The immense difficulty of eradicating cancer once it has shown itself has impressed upon the majority of surgeons the belief that, in its essence, cancer presupposes, like gout, a special morbid condition of the blood which is antecedent to its own growth. Additional evidence of its constitutional character is found in its being so often hereditary, so frequently multiple, and so uniformly in its termination indicative of cachectic taint.

Mr De Morgan believes that these evidences, though strong, are not conclusive of cancer being a blood disease, but rather holds, "*cancer and allied diseases partake more of the nature of parasitic disease than of the results of previous blood-poison.*"—P. 6.

We cannot trace Mr De Morgan in the very able discussion of the characteristics of malignancy, the essentials of cancer, and the views of Simon and Paget as to relation between the tumour and the blood-poisoning, but we would notice the great interest of his observations on the rarity of the recurrence of primary cancer in the same organ, or in similar organs, and on the almost invariable robust health and absence of cachectic appearance of patients before the appearance of, and during the time of, *primary* cancer. —Pp. 13, 14.

Recurrence of simple tumours is not so rare as to render the recurrence of cancerous tumours in any way different except in degree. We can hardly go so far as Mr De Morgan, when he tells us that *the cancerous cachexia is the result for the most part of cancerous ulceration.*—P. 19.

The manner of recurrence of simple and malignant growths is discussed with much freshness and point. Some very interesting cases of reproduction of cancer from contact are given, in which pretty strong evidence of multiplication of cancer from actual spreading of cancer-germs is brought forward. This explains the wide spread of disease in the neighbouring parts whenever a cancer is cut *into*, instead of being cut out. An instance of this spreading is seen in the tubercles of cancer in the skin over a breast, and every experienced surgeon knows how hopeless an operation is in such a case.

Having, then, easy explanations of local recurrence in the three channels of lymphatics, bloodvessels, and interstitial cellular tissue, how, it may be asked, can we account for a merely local disease ending in simultaneous multiple growths in different parts? This is a knot which our author cuts rather than unties, by asking how can it be proved such cases really occur at all, for how can it be shown that in no part of the body was there a tumour existing before these multiple ones appeared?—P. 32.

Why, then, do cancers recur so frequently? Their juice is easily carried away; they recur in young people in whom vital action is active, and whose tissues are lax. The elements of a cancerous tumour are loosely heaped together, hence easily scattered, and their low vitality is tenaciously maintained.

As to the cancerous cachexia, Mr De Morgan does not think it an evidence of the primary seat of cancer being in the blood, but merely a result of the absorption of the foul discharge from the cancerous ulcer. When we add to this the pain, the mental distress, the hopeless future, the foul odour, we cannot wonder that health, bloom, and weight rapidly deteriorate, even without any presupposed blood disorder.

What, it may be asked, is gained, supposing these views are established? Expectancy, regimen, and drugs, will no longer have any excuse for their use; local treatment only will be used. All medicines are useless and hurtful, as wasting time; only two courses remain—leave the tumour to run its course, or extirpate it as completely as possible, as soon as possible.

The indications for and against operation in doubtful cases are well given, and the relative merits of the knife and caustics discussed most sensibly.

We are surprised that Mr De Morgan gives the credit of the sulphuric-acid treatment to Michel of Paris. Syme practised and taught it in suitable cases so long ago as 1856.

The use of chloride of zinc in solution after operations for cancer, as introduced by the author, is founded on most rational principles. It is not only an admirable antiseptic, but also its use may kill any stray germs of cancer which may remain in the tissues, or may have got there during the operation.

A method of healing cancer by starving the patient has the great disadvantage, that in early cases it puts off time which would be better employed by operating at once, and in late cases is most likely to hasten the fatal issue.

We have rarely read a medical work of more interest, and con-ing so much thought, in so small space.

Earth as a Topical Application in Surgery: Being a full Exposition of its Use in all the Cases requiring Topical Applications admitted in the Men's and Women's Surgical Wards of the Pennsylvania Hospital during a period of six months in 1869. By ADMELL HEWSON, M.D., one of the attending Surgeons to the Pennsylvania Hospital. With four Photo-relief Illustrations. Pp. 309. Philadelphia: Lindsay and Blakiston: 1872.

THIS is rather a large book on a small subject; but the size of it is partly explained by the fact that all the cases treated by earth in six months are pretty fully detailed.

As is usual in the case of new or revived remedies, the merits are exaggerated, and the deficiencies ignored. A perusal of this work will leave the reader with an idea that dry earth in some cases, mud or clay in others, may be trusted as the only necessary contents of a hospital dressing-box. As a dressing, it, the earth, is deliciously cooling, relieves pain instantaneously, removes fœtor in the most rapid manner, etc., etc. A tolerably careful analysis of the ninety-three cases recorded has left us in the belief that the results are by no means good, that the trifling cases got well, as they always should do, but by no means quickly; that one excision of a breast, in a wiry old woman, healed quickly and well, but that another was an exceedingly slow and unsatisfactory cure; that two cases of wound of the knee-joint died; that of four compound fractures treated in their whole course by the earth, only one recovered; that of four amputations above the ankle, only one recovered; indeed, in general terms, that the results in the really serious cases were about as bad as possible. To one case we must draw attention, as being of so remarkable a nature as to tax our powers of belief to the utmost. At page 100, we are told that an *epithelial* ulcer of the face healed up under the use of earth from the patient's garden.

Dr Hewson has made out that earth is a deodorizer, a most valuable agent for destroying fœtor—he has not proved that it is an antiseptic. He states that it relieves pain in the most marked manner, when applied after a wound or an amputation; but then we know that the pain naturally ceases after a time, especially when aided (as in most of Dr Hewson's cases it was aided) by a hypodermic injection of atropia.

We believe Dr Hewson will tire of his panacea, as inventors (original or second-hand) have tired, and will tire, of their panaceas. Dry earth will be useful in some cases as a deodorizer, but will never be taken into general use as a dressing, from its clumsiness and difficulty of application.

As a means of removing odours from the hands it may be of use in dissecting-rooms, as it is in the latrines attached to them.

There is a long chapter on the *modus operandi* of the dry-earth dressing, in which we recognise a good deal of Mr Simon's paper on inflammation in the *first* edition of Holmes's Surgery, besides a great deal of most original theory, on the chemistry of the deodorizing power of earth, which our stupidity prevents us from criticising.

Four photo-relief illustrations which accompany the cases are most admirably executed, and give a most life-like representation of the patients.

Arsenal de la Chirurgie Contemporaine; Description, Mode d'Emploi, et Appréciation des Appareils et Instruments en usage pour le Diagnostic et le Traitement des Maladies Chirurgicales, l'Orthopédie, la Prothèse, les Opérations Simples, Générales, Spéciales, et Obstetricales. Par G. GAUJOT et E. SPILLMAN. Avec 1855 figures intercalées dans le texte. Tome ii. Par E. SPILLMAN. Paris: J. B. Baillière et Fils: 1872.

So long ago as December 1867, we reviewed at considerable length the first volume of this work in this Journal, and the appearance of the second volume at so long an interval, and under different authorship, has given us no reason to modify or tone down the very favourable opinion then expressed. M. Gaujot's other duties have prevented him from completing his great and laborious work; so he has left to his successor in the teaching department of operative surgery at Val-de-Grace the duty of writing the second part of the *Arsenal.* M. Spillman has endeavoured to follow the same arrangement and method which M. Gaujot had chalked out for himself. The volume is profusely illustrated, no fewer than 1445 woodcuts being arranged in its 1100 pages.

In the first 180 pages we have very full accounts of the approved prothetic apparatus of the oculist, the dentist, and chiefly of the maker of artificial limbs. The instruments described are chiefly of French origin, though Bly's leg and foot are figured. The rest of the work contains a description of all the instruments invented for operations of all kinds, even obstetrical ones. Many which are absurd and useless are figured and described, perhaps to prevent other people from re-inventing them. It is a work that will be useful to surgical teachers, and which certainly no instrument-maker, pretending to a knowledge of his art, should be without.

Photographic Clinique of the British Hospital for Diseases of the Skin. No. 1. Edited by BALMANNO SQUIRE, M.B., F.L.S., Surgeon to the Hospital.

OPINIONS may differ as to the permanent value of photographic ·rtraits of skin diseases, but there can be no doubt as to the present value of this Number of this Photographic Clinique, which is an admirable illustration of oval or true keloid, the accompanying sheet of letterpress containing a succinct and valuable account of the disease, and of Mr Squire's experience in regard to it. The work, as we have already indicated, is to be obtained by subscription only. Subscriptions to be sent to 56 Great Marlborough Street, Regent Street, London, W.

Part Third.

MEETINGS OF SOCIETIES.

MEDICO-CHIRURGICAL SOCIETY OF EDINBURGH.

SESSION LI.—MEETING III.

Wednesday, 20th December 1871.—Dr HANDYSIDE in the Chair.

The Chairman, after returning thanks for the honour conferred upon him, in a few appropriate words alluded to the progress made during the past half of this century in the furtherance of medical science, and hoped that now, the Society having entered on the 51st session of their existence, all their latent force would be called forth during the latter half of the century upon which they had now entered, for the accomplishment of those objects which it was the desire of the Society to promote.

The Chairman proposed that the time should be limited for the exhibition of pathological specimens, with remarks thereupon, and that, if possible, five minutes out of the half-hour should be reserved for the reception of medical news. If this met the approval of the Society, he would, at half-past eight, sign for the leading paper of the evening to be read.

The Chairman then called for the exhibition of PATHOLOGICAL SPECIMENS.

I. *Dr G. W. Balfour* then said, I have to show the Society a specimen, interesting not only in itself, but also in regard to its history.

The patient, James N., came under treatment three months ago, evidently suffering from spasmodic affection of the larynx, and acute disease of the lungs. From the latter he recovered, but he subsequently had repeated attacks of asphyxia, followed by copious expectoration of fluid. There was a slight difference on the two sides of the body, both in regard to the pulse and respiration. The right pulse was smaller and weaker than the left, and the respiration on the right side was feebler than that of the other. Both pupils and the voice were natural. On altering the position of the patient, there was no change in the respiration. Any tumour present was certainly not movable. An aneurism of the arch was believed to be the cause of the symptoms, but no positive evidence could be elicited, beyond slight accentuation of the aortic second. About a week ago the patient was seized with one of his attacks while I was making the visit. He became asphyxiated in a second or two, and I then noticed that respiration was equally diminished on both sides. He gradually became apparently moribund, and tracheotomy was performed as a *dernier ressort*, but without much hope of any relief; none occurred, and he very shortly afterwards died.

On post-mortem examination, an aneurism, the size of a small walnut, was found arising from the posterior part of the arch of the aorta. The arch itself was slightly dilated. The aneurism pressed upon the trachea a little above its bifurcation and to the right; a small clot adherent to the trachea occupied its posterior portion. In the natural condition the slight obstruction was more exerted, therefore, on the right bronchus; during any exacerbation, the dilatation of the tumour passed across the whole trachea, and obstructed both sides equally. The case in many points resembled much that of the late Earl St Maur, and its post-mortem result tended very strongly to confirm the accuracy of the diagnosis made by Dr Williams in that case.

II. *Dr Argyll Robertson* next exhibited TWO MINUTE TUMOURS OF THE EYE, removed two days ago from the right eye of a girl 18 years of age. They were situated over the junction of the sclerotic and cornea, towards the outer angle of the eye.

History.—They were noticed at birth, and had not shown any material increase in size during life. They were found to be very intimately connected with the structures of the cornea and sclerotic, and were somewhat difficult of removal. Their structure resembled true skin, and in the smaller of the two hairs were seen growing on the surface. They were specimens of *trichosis bulbi*, a rare form of tumour. From the same patient were removed a small fatty growth from the sclerotic, and also some pendulous growths from the auricle on the same side. This also corresponds to a case described by Dr Mackenzie, where he had a cyst only, and this was accompanied with pendulous growths from the orbit.

Dr Matthews Duncan wished to know if they developed themselves during life?

Dr Robertson said they were always congenital, not very common, and there were very few upon record.

Dr Handyside stated that it had been a very much contested point whether the cornea had a cuticle upon it or not, but he con-idered this pathological specimen, with hair upon it, was the best oof that could be given of hair upon the cornea.

III. *Dr Ritchie* then showed a specimen vomited by a woman, and said to be a TADPOLE! It illustrated the dangers of an impure water-supply.

IV. *Dr Stephenson* then read a paper on ELECTRO-THERAPEUTICS, which will appear in a future number of this Journal. After referring to the present position of the subject, he entered into the differences in action between the constant or Voltaic current and the induced or Faradic, as illustrated by their effects in various forms of paralysis. In some cases the muscles can be excited alike by the Faradic or Voltaic, but there are others where they do not reply to the stimulus of the first form, but readily act to that of the latter. There are also conditions of normal, increased, or diminished excitability. In the treatment of all cases a careful examination of the electric condition of the muscles is therefore necessary to determine the form of electricity to be employed. Speaking generally, that current is most useful to which the muscles preserve their contractility, but there are special indications for the selection of one or other according to the object aimed at by their use. The special superiority of the Voltaic current comes into play where we wish to act, not only on the muscles, but also upon the central lesions and secondary pareses of the nerves. The views of Remak and others on this subject were briefly adverted to.

The action of the Voltaic current, upon which the author specially dwelt in the paper, was its restorative or tonic action in impaired conditions of the nervous system and affections arising therefrom. Cases were cited from the writings of others, and the author's experience, where it had influenced the excessive secretion of urea, and relieved the exhaustion, irritability, dyspepsia, sleeplessness, vertigo, and other symptoms due to nervous exhaustion. The immediate effect in some cases was very striking, and the author believes that a wide field for its use will be opened in affections for which it has as yet been little used. The restorative action also extends to the muscles in so-called rheumatic affections (lumbago, etc.), and the back pains of females generally regarded as of pelvic origin. Cases of this class were likewise given.

Lastly, the influence of the constant current in relieving and curing pain was discussed. It is not always possible to say whether a particular case will be benefited by the current or not. If it is probable that the pain is but the enduring effect of some cause which has ceased to act, or a "habit," or produced by debility, exposure to cold, or by fatigue, a cure may certainly be looked for. But the best criterion is the effect of the remedy itself. In favourable cases an immediate relief is felt after the first application, which becomes more decided after the second or third. Much depends upon the proper mode of application; where one fails another will succeed, such as employing electro-puncture in sciatica, instead of the ordinary moist conductors. The particular point of application, the strength and duration of the current, sometimes make all the difference. Where no effect is observable in three or four sittings, it is improbable any benefit will be derived by continuing. Cases illustrative of the action on pain were reserved for a subsequent paper.

Dr Robertson remarked on the value of such a paper, and referred to the marvellous results he had seen in Remak's practice from the use of the constant current, chiefly in cases of tabes dorsalis.

Dr Wright stated that twenty years ago he had advocated the use of the constant current in diseases, and had recommended a most efficient and extremely portable form of battery. In the use of any battery it was essential to have a voltameter, but he had been disappointed in the use of the constant battery, as, though its benefits were undoubted, they were only temporary. It was of great use in rheumatism, and the most important indication was to keep up the current till a certain amount of inflammation was set up.

Prof. Sanders said that, in regard to the use of galvanic electricity, he would like that Dr Wright, who has for many years studied the subject, would communicate to the Society his views. In late years different forms of apparatus have been introduced, and particular study has been given to the effects of the different kinds of electricity, as shown by Dr Stephenson's paper. We may use electricity in various ways. It is employed either as a stimulus to excite paralyzed nerves or muscles, or it may be applied in order to give tone to the nerves and strength to the various parts stimulated. Another effect is to relieve pain; and the fourth action (one not much studied) is, where the current modifies the nutrition of the part. We are familiar with the stimulation of the electric shocks, and every one will agree they are of service. But the subjects now attracting more attention, as shown in Dr Stephenson's paper, are,—the value of electricity as a tonic, and in the relief of obscure and harassing pain. The tonic treatment, which is obtainable by the constant rather than the interrupted current, restores exhausted nervous energy, and is often of permanent benefit. With regard to pain of any kind, and especially in rheumatic and sciatic affections, we are capable of giving relief sometimes by frictional electricity, sometimes by shocks, and sometimes by the Faradic current. The effects upon wounds remain a subject of investigation. In the New Royal Infirmary we must have a room for various kinds of electrical apparatus, and we need also men specially devoting themselves to these different modes of investigation. He hoped to hear more from Drs Wright and Stephenson; and, in conclusion, expressed the pleasure with which he had listened to the paper.

Dr Stephenson then shortly replied, and thanked the Society for the manner it had received his communication.

SESSION LI.—MEETING IV.

Wednesday, 17*th January* 1872.—Dr HANDYSIDE, *President*, in the Chair.

I. *Dr Matthews Duncan* exhibited to the Society a remarkable CALCULUS which he EXTRACTED from a MALFORMED CHILD. The calculus presented nothing peculiar in itself; it was composed of phosphate of lime, and weighed 160 grains. The calculus was extracted from a cloaca, into which the rectum and bladder both opened.

II. *Dr M. Duncan* then showed a still more remarkable calculus, composed of cholesterine, weighing 390 grains; its length being 2½ inches. It was very kindly sent to Dr Matthews Duncan by Dr M'Leod of Hawick, who, at the same time, forwarded a very remarkable history, from which Dr Duncan made a few quotations. Dr M'Leod states, that he was called in to see a young lady, who had suffered from a discharge from the umbilicus, which had continued three years. On examination, he discovered a tumour, which was red, hot, swollen, and painful to the touch. She was ordered to poultice it, and in the course of four days the accompanying mass (calculus) was discharged Dr Duncan remarked, that the tumour was quite as hard when he received it from Dr M'Leod as it was when presented to the Society. In another communication to Dr Duncan, Dr M'Leod stated that there was nothing remarkable in the history of the case, except that, in the progress of the calculus to the surface, no symptoms of disturbance were observed, save several severe exacerbations, which took place three years ago. Before the discharge commenced, there appeared to be no suffering worth mentioning. The calculus came right through the navel, which very speedily contracted, and is now completely closed. Professor Crum Brown kindly analyzed the specimen, so that there could be no doubt it was composed entirely of cholesterine.

III. *Mr Annandale* next presented to the Society a few specimens of morbid growths. The first, Mr Annandale stated, was a good example of a tumour growing from the bones of the forearm. The tumour itself was cartilaginous in nature, but the principal point to be observed was the rapidity of its growth, which was only four, or not exceeding five, months. Another interesting point connected with the tumour consisted in the fact, that this same patient had the ring finger removed several years ago, for a tumour of the same kind. The patient was an old woman, seventy-three years of age. According to her statement, there was nothing in the history which could account for it spreading up her arm. The operation was performed by Mr Annandale three weeks ago, and now patient was quite recovered, going about the ward.

The second specimen Mr Annandale presented to the Society, was a good illustration of one of those cystic tumours not uncommonly met with in the neck.

History.—The cystic tumour had existed for twenty-five years in the neck of this woman. Latterly, the cyst had become very troublesome. For one or two years previous to operation, a discharge was constantly trickling away, and should the opening in any way become closed, the cyst required to be opened twice a week, from the accumulation of fluid which took place. The operation was quite simple, except that in the deeper dissections very great care was required to separate the tumour from its deeper connexions, as it was at its posterior aspect firmly adherent to the carotid artery and the internal jugular vein. Mr Annandale applied a ligature round a small portion of the tumour, but the greater part of it he cut away with the knife.

IV. *Mr Annandale* next exhibited the HEADS OF TWO FEMURS, which he had removed quite recently. The patients in both these cases were doing well.

V. *Dr Fergus*, of Glasgow, then read a paper on "The Sanitary Aspect of the Sewage Question, with Remarks on a little-noticed Cause of Typhoid and other Zymotics." This paper was published in the February number of this Journal, at p. 717.

Dr Matthews Duncan said that the importance of the question of maintaining health and saving life would be admitted on all hands. Attention had been directed by the lecturer to effluvia from drains and sewers, but there was another source of bad smells—the adhesion of soap to the waste-pipe of an ordinary washhand-basin. He mentioned a case in point which had come under his own observation, and said that the defect had been cured by the introduction of a trap. He pointed to the great evils which resulted from imperfect fittings, and concluded by taking exception to the list of zymotic diseases read by Dr Fergus, and which were said to result from sewer-gases.

Bailie Cousin observed that, as an outsider, he might advert to one point which had not been touched upon by Dr Fergus, viz., the escape of water from corroded pipes to the cisterns beneath. In common stairs it was quite a usual thing to have the closets one above the other, and a water-cistern above each. When corrosion took place, the water percolated into the cistern beneath, and this was no doubt the cause of much disease. Speaking in reference to Hoey's patent, he gave it as his opinion, that it would be a dangerous thing to introduce such a small quantity of water, even with the use of sulphuric acid.

Dr Littlejohn said he could corroborate what Bailie Cousin had said in reference to water passing from closets into cisterns beneath. He had listened with pleasure to the expedients to which Dr Fergus d referred to supersede water-closets; but the difficulty he had s, that while such expedients might be carried out successfully in a gentleman's house, the case was different when the application was made to populous tenements. What he desiderated was, some plan whereby sewage might be conveyed from large tenements without creating a nuisance. He said that Ramage's patent worked well and easily in the water-closet; but unless proper arrangements were made, no system on earth would give satisfaction. Unless plumbers were looked after, the pipes and traps, instead of being operative, would in many cases be inoperative. The back pipes must also be ventilated not only *qua* the house, but *qua* the house in which the pipes were placed. Having mentioned that it would be necessary to cleanse the closets at least twice a year, he went on to say, that so far as his experience went, there was a forcible connexion between certain diseases and sewage. Of late, the Town Council of Edinburgh had insisted upon water-closets being introduced into working men's houses. Now, he found that if they took a range of houses where this had been done, in the course of one year there were double the deaths from typhoid and scarlet fever, and any epidemic fever occurring in these houses was intensified, and assumed a character of malignant mortality.

Dr Fergus briefly replied; and a vote of thanks having been accorded to him from the chair, the public business terminated.

OBSTETRICAL SOCIETY OF EDINBURGH.

SESSION XXXI.—MEETING IX.

27th March 1872.—Dr Pattison in the Chair.

Prof. Schroeder, Erlangen, was admitted as an Honorary Fellow of the Society; and Dr Borwick Robertson, Lauder, was admitted as an Ordinary Fellow.

I. A NEW MODE OF TREATING PUERPERAL FEVER.

BY DR CHARLES BELL.

It is not my intention to enter on a lengthened dissertation on puerperal fever, as it is fully described in many of our works on midwifery, and my object is merely to bring more prominently under the notice of the Society a mode of treatment which I have been induced to recommend, from its successful results in diseases of a similar nature, as well as in the few cases of this disease in which I have had the opportunity of employing it. For, although I have been connected with the Royal Maternity Hospital for many years, only one case of puerperal fever has occurred during the period I was doing duty. I ascribe this immunity from the disease, to the liberal use of the permanganate of potash, both as a lotion and in the form of liniment, in making examination per vaginam, and to a strict attention to ventilation, and to the avoidance of overcrowding the wards. I feel satisfied that there is greater risk to the parturient woman, from a close contaminated atmosphere, than from the free admission of pure air into the lying-in chamber. I have therefore always ordered one of the windows of the wards to be kept partially open.

The more we study puerperal fever, the correctness of the opinion entertained by Sennertus and Riverius will appear the more obvious, namely, that it is a blood disease arising from the absorption of a virulent poison into the system, which is communicable from one individual to another, and may also be inhaled from the atmosphere. This circumstance was fully illustrated by M. Peu, in his description of the epidemic fever which appeared in the Hôtel Dieu in 1664, when a great number of women died, in consequence of the number of wounded persons who were accommodated under the lying-in ward. This was the first appearance of the disease in the epidemic form, and it was peculiar in its character, as it was preceded by hæmorrhage, and was attended by numerous internal abscesses. It formed a striking contrast to the next epidemic, which occurred in Paris in 1746, and proved fatal to many women both in the hospital and to those who were delivered in their own houses. According to Montonu, it "commenced with diarrhœa; the uterus became dry, hard, and painful; it was swollen, and the lochia had not their ordinary course; the women experienced pain in the bowels, particularly in the situation of the broad ligaments; the abdomen was tense; and these symptoms were sometimes joined with pain in the head and cough. On the third and fourth day after delivery, the mammæ became flaccid. On opening the bodies, matter like curdled milk was found on the surface of the intestines; a milky serous fluid in the hypogastrium; a similar fluid was found in the thorax of certain women; and when the lungs were divided they discharged a milky putrid lymph. The stomach, intestines, and uterus, appear to have been inflamed.

It may not be uninteresting to refer to the character of the disease as it appeared in the epidemic which occurred in Paris and Lyons in 1750, as illustrating still further the complications which attend the disease, and prove still more its zymotic character. Poteau informs us that the uterus was found enlarged, and its internal surface soft and black, and its parietes were livid and gangrenous.

While puerperal fever may be complicated in the manner just described, it is not a necessary consequence, as, like smallpox in its most fatal form, it runs its course so rapidly in some cases that there is no time to form any local lesion which can be ascertained during life, or discovered after death. Dr Rigby informs us, that in some of the cases which came under his notice in the general lying-in hospital, there was "neither time nor power sufficient to produce either symptom or trace of inflammation, the powers of life having from the commencement sunk under the deadly influence of the disease." He therefore adds, "that of all the diseases to which the lying-in woman is exposed, puerperal fever is the most to be dreaded, and that there is none in which the accoucheur is frequently more helpless."

In a disease of such virulence, it is of the utmost importance that a remedy should be discovered to moderate its severity. I am convinced of its similarity to erysipelas—a circumstance which has been proved, not only by its appearing epidemically along with that disease, as happened in Barnsley in 1808, and in Leeds in 1809, but there are instances on record,[1] in which puerperal fever has been induced by those attending patients suffering from erysipelas, and then attending women in their confinement; and there have also been instances of puerperal-fever patients producing erysipelas in their nurses. I have also observed both diseases existing at the same time in the same individual. I was therefore induced, many years ago, to suggest that the treatment which I had found so beneficial in erysipelas should be adopted in puerperal fever. I had no opportunity, however, of putting it in practice until a comparatively recent period, when I employed it in the only case which came under my care in the Maternity Hospital, and although the case was very severe, and the patient's life was despaired of, it proved successful, and the woman left the hospital in health. I have already reported this case to the Society. The success which attended this case led me to adopt it in another case, which I was requested to see by Professor Simpson, which was considered hopeless, yet the patient left the hospital in perfect health. Through the kindness of Dr Young, I had an opportunity of employing the treatment in a patient of his, whom I attended in a premature labour. She was seized with puerperal fever soon after her confinement, and I despaired of her recovery, but she was ultimately restored to health, I understand, for I ceased my attendance before she was quite recovered.

The treatment of puerperal fever in former days was of the heroic kind, as the following case illustrated, and I relate it in order to show the contrast to what I recommend.

22*d Nov.*—Mrs S., aged thirty-four, a thin delicate-looking woman, with a sallow complexion, was delivered of her third child, a girl, after natural and apparently easy labour. The placenta was expelled immediately after the child. The womb continued large, although there was no hæmorrhage.

24*th Nov.*—Apparently going on satisfactorily, and she felt so well that she sat up in bed for some time in the morning, but at 1 P.M. she was seized with rigors, followed by a glow of heat, soon after which violent pain in the region of the uterus, which was still large.

A linseed poultice was applied to the abdomen, and she had the following powder: calomel gr.ii., and antimonial powder gr.v., in gruel.

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[1] Ramsbotham, p. 596.

8 P.M.—Bowels moved twice; pain in the womb so severe that she could not bear the slightest pressure; pulse 120, full and strong; tongue white and flabby. She was bled to ℥xvi., when she became sick, and vomited some undigested food. The stomach was so irritable that she got no medicine.

25th Nov., 8 A.M.—Has had some sleep, but is still in great pain in the lower part of the abdomen; pulse 120, weak. To have two dozen of leeches, and then the following powder:—℞ Hydrarg. cum creta, gr.iv.; pul. Doveri, gr.x.

2 P.M.—Dr Rigby ordered the womb to be washed out with tepid water, and that she should have six grains of calomel and four of antimonial powder.

11 P.M.—Has had several hours' sleep, and feels easier, although there is still much tenderness on pressure; pulse 120, full. To have the white saline mixture in the morning, until the bowels are moved.

26th Nov.—Has perspired freely during the night. Bowels moved several times. Stools dark-coloured at first, but they became more natural. The uterus more painful and swollen, and there is slight tympanitis. Great thirst; tongue furred. Pulse 128, sharp and resisting.

Eighteen leeches were applied to the abdomen, and she had eight grains of calomel and four of antimonial powder. A linseed poultice to be continued after the leeches come off.

9 P.M.—Feels easier, and there is less tenderness on pressure. Tongue cleaning round the edge; pulse 132, weak. Bowels moved several times. The womb to be again washed out with tepid water.

27th Nov., 8 A.M.—Complaining of general soreness, but has no pain on pressure, although the womb is large and hard. Bowels moved several times; tongue cleaner. Expression of countenance very anxious. To have the following draught:—℞ Mist. cretæ, ℥ss.; tinct. catechu, ʒj. M. Ft. haustus.

This draught to be repeated after every stool.

2.30 P.M.—Dr Rigby ordered her to have a soda powder.

4 P.M.—Dr Lee saw her, and ordered her to have three grains of gray powder, with four of Dover's powder, every four hours, in consequence of her having vomited a quantity of bilious matter.

8 P.M.—Bowels moved twice, and she has again vomited a quantity of bilious matter, and she feels much exhausted; eyes sunk; countenance extremely anxious; tongue loaded with white fur; pulse 130, weak. To have two grains of opium.

10.30 P.M.—No return of vomiting and purging, and feels easier than she has done since her illness. The uterus seems less, and is free from pain; but the abdomen more tympanitic. It was rubbed with lard and a poultice applied, with great comfort. The first oint of her middle finger much swollen and inflamed, and the pain tends to the shoulder. To have laudanum applied.

28th Nov., morning visit.—States that she is quite comfortable, although very weak, and has much pain in the right arm, which is inflamed from the wrist to the elbow on the outside, and there are several dark spots on it.

To have a lotion, composed of equal parts of camphorated spirit and ammonia, applied to it, and to take one of the following pills every hour:—℞ Camphor, ext. hyoscyam., āā gr.viij.; opii, gr.iii. M. et divide in pil. iv. To have sago and wine.

She sank rapidly, and died at 2 P.M.

In place of such active treatment as was adopted in the above case, I recommend small doses of calomel and James's powder in proportion of a twelfth of a grain each, along with a grain of white sugar, carefully mixed and given regularly every two hours until the bowels are freely moved; and thirty drops of the muriated tincture of iron every three hours. The vagina to be washed out several times a day with Condy's red fluid and tepid water, and a linseed poultice applied to the abdomen. If this treatment is regularly and fully carried out, and not in the *timid, partial* way which many practitioners do in erysipelas, and then undervalue the treatment, I feel certain it will give the best chance of cure to the patients.

Dr James Young believed that great benefit was obtained from using calomel in the manner described by Dr Bell; hé had lately suffered from an attack of erysipelas, and been treated with the tincture of the muriate of iron and calomel, in doses of a twelfth of a grain, with the best results. He had never seen head symptoms in puerperal fever, and he looked upon diarrhœa as one of the most serious complications you could have in that disease.

Dr Ritchie had tried calomel as a purgative, in the Children's Hospital, in doses of a twelfth of a grain, but without any effect. He considered it important to distinguish the special character of the fever; in a fever of the typhoid type he would not be inclined to use the tincture of the muriate of iron.

Dr Bell regarded puerperal fever as a disease *sui generis*, and that you may have complications occurring in it as in any other disease. The tincture of the muriate of iron he believed lowered both the pulse and the temperature. The efficacy of the powder depends greatly on the manner in which it is compounded, and the regularity with which it is given. When these have been properly attended to, he has never found it fail to move the bowels, and to diminish fever; but if they are neglected it is not surprising that it should cause disappointment.

II. CASE OF ACUTE INVERSION OF THE UTERUS. BY DR KIRK DUNCANSON.

Mrs B., primipara, aged 23, of nervo-sanguineous temperament, was seized with spurious labour-pains on the morning of Wednesday. These pains continued more or less up to Friday night, when, as there was no dilatation of the os, a strong dose of bromide of potassium with chloral hydrat was given; to be repeated in two hours. The patient did not sleep, but the lips of the os uteri could be easily dilated to the size of half-a-crown on the Saturday morning. The waters had been dribbling away, during the intervals from pain, through the night. The head was felt presenting in the first position of Naegele high up at the brim of the pelvis. The passages were moist, cool, and roomy. The patient preferred moving about the room to lying in bed. At six o'clock in the evening, the patient, owing to her restlessness during the pains, was given chloroform. She was as restless without the anæsthetic as with it, unless when given in enormous quantities, producing profound anæsthesia and cessation of the pains. At five minutes to twelve o'clock, by inserting the fingers of the left hand into the rectum the head was tilted out of the external outlet. The cord was felt round the neck, but was relieved as the head escaped. As the shoulders and body were passing through the outlet, the patient, who was with difficulty kept in the recumbent lateral posture, suddenly flung herself round upon her abdomen, at the same time throwing her arms round an extra attendant at the other side of the bed. Immediately after the birth of the child the patient made a strong expulsive effort as if bearing down during a pain. The child was asphyxiated; the face and head livid. Restorative means were used, and the pulsations in the cord were feeble before ligatures were applied, and the child, a boy, separated. In the meantime the mother was lying upon the extra attendant, perfectly conscious; asked if the child was a boy or a girl, etc. After handing the child to the nurse, on going round to the left side of the bed, the patient's pulse was felt to be good. She felt perfectly well. She was assisted round upon her left side, and back to the other side of the bed, her head being kept as low as possible. On feeling the cord close to the vulvæ the bifurcation of the vessels was felt. The placenta was supposed to be lying in the vagina. To see that the uterus was properly contracted whilst the placenta was being removed with the right hand, the left was placed on the abdomen where the uterus is generally felt like a fœtal head. The appearance of the fœtal head was not felt, but a depression with two lateral prominences. In the meantime the placenta had been easily withdrawn with the right hand, and disposed of; the fingers were inserted into the vagina to feel for and remove clots, when immediately within the vulvæ, a large, firm, round body was felt. The absence of the uterus from its usual place, and this strange body in the vagina, was very like inversion of the uterus, but there was no collapse, and the hæmorrhage, if any, was very slight. The complete inversion of the uterus, on further examination, could not e mistaken; the large globular mass pretty firm, and the cervix stinctly felt, but the fingers could in no direction upwards escape from the vagina. The patient had a glass of whisky given her. The relatives were informed that there was something unusual—something I had never seen before; and although the patient looked quite well at present, the sooner Dr Keiller was sent for the better. Dr Keiller was immediately sent for. My anxiety led me to attempt the reduction of the inverted uterus. Placing the patient upon her back, I pressed upon the fundus, with the points together of the fingers of my right hand. The patient, screaming, withdrew herself; so the attempt to push up the fundus in this way was given up. On the patient's looking drowsy, and the hæmorrhage increasing, another attempt at reduction was made. The patient was again at the left side of the bed. This time the left hand, with the back of hand and arm well larded, seized the inverted uterus within the vagina, as one would seize the bag of Lister's carbolic spray-producer with the left hand, then gradually pressing upwards as a whole, and compressing the fundus most firmly with the little finger and the third finger. When the vagina was enormously stretched upwards the fundus was felt gently yielding; the thumb was pressed against it; the other pressure being still kept up, the uterus replaced itself suddenly. The uterus felt softer, and was more covered with clots when the second attempt was made than it did at the first. The cervix was also more relaxed, and the patient's struggles and attempts at withdrawal were more feeble than when the right hand was inserted as a cone. Feeling the uterus returned to its normal position, I withdrew my left hand, and, Dr Keiller arriving just then, the clots, which were felt like cords hanging from the uterine sinuses, were left. Dr Keiller, who was very soon in the house after receiving the message, on examining the patient, found the fundus still a little depressed. I had not followed it up with my fingers. Dr Keiller speedily put the uterus all right, and it could soon be felt like a fœtal head in its proper place. Collapse was now complete. Stimulants were given, hot bottles were applied to the feet and legs, etc. The patient remained in this state for two hours. She was able to swallow. About three o'clock in the morning she began to stare wildly round her, ask for her baby, where had she been, etc. She was told to be very quiet, and was given some ergot with brandy. Shortly after this, violent retching and vomiting set in; nothing would remain, not even brandy, on her stomach. All the vomited matter smelt strongly of chloroform. After the vomiting had ceased for some time, now about five o'clock in the morning, the patient took a small piece of water-biscuit made as breadberry, with brandy; shortly after this she took a drink of ginger-beer, with a small piece of plain water-biscuit. From five to seven she had short intervals of sleep, taking some nourishment when she awoke. I left her about half-past seven, but had not been long home when I was suddenly recalled by a message stating that the patient was worse than she had ever been. On reaching the patient I found her no worse than when I left her, but still restless. She got one grain of opium, and was told to lie quiet and sleep. Her pulse then was 108 beats per minute. She was seen frequently during the day. Her pulse improved in strength, and rose to 120 beats per minute at night. The pulse was 120 on the Monday morning, and rose to 130 in the evening. Tuesday morning it was 120, and the temperature 101° F.; the evening temperature rose to 103° F., with a pulse of 130. On the Wednesday morning the temperature was 101°; pulse 120. The temperature and pulse gradually fell to the normal after this. She had her bed changed on the Tuesday, and was able to be out of bed on the Tuesday following, ten days after delivery.

The causes of the inversion in this case may have been,—1*st*, The uncontrollable restlessness of the patient; 2*d*, The saturation with chloroform of the patient's system—she had fully three and a half ounces in less than six hours. (1.) The restlessness of the patient caused her to walk about the room when there was no need for it; and loss of sleep on the Wednesday and Thursday nights. (2.) The chloroform saturated the patient's system, and destroyed the tonicity of the uterus. These may be the predisposing causes. The immediate causes may either be the patient's striking her abdomen, and thus the fundus of the uterus, upon the attendant or bed; or the shortness of the cord, and its dragging round the neck of fœtus. (The cord was not more than 14 inches in length.) Either of these separately, or both combined, may have caused a depression of the fundus. This depression of the fundus caused the patient to use the strong expulsive effort which occurred immediately after the birth of the child, and made a complete inversion of the uterus. The inversion was acute, as the reduction was completed in less than one hour after it was diagnosed; and in less than an hour and a half from the birth of the child, or the occurrence of the inversion of the uterus, it was returned to its proper situation.

Part Fourth.

PERISCOPE.

Removal of Corns.—Hard corns may be carefully picked out by the aid of a small sharp-pointed scalpel or tenotomy knife, and if well done the cure is often radical, always perfect for the time. But they may be equally successfully removed by wearing over them for a few days a small plaster made by melting a piece of stick diachylon (emplastrum plumbi), and dropping it on a piece of hite silk. The corn gradually loosens from the subjacent healthy skin, and can be readily pulled or picked out. Soft corns require the use of astringents, such as alum dissolved in white of egg, or the careful application of tincture of iodine. Prevention, however, is in regard to them better than cure, and can be readily attained by daily friction with cold water between the toes.

ON THE TREATMENT OF HYPERPYREXIA BY THE EXTERNAL APPLICATION OF COLD.—In a very interesting and exhaustive paper upon this subject, Dr Straus of Strasbourg goes over the entire history of the treatment of hyperpyrexia by the external application of cold, from the time of Hippocrates down to the present day, and the conclusions he arrives at are as follow:—If a healthy man be placed in a cold bath he speedily becomes chilled; his skin pale, *cutis anserina;* he shivers, and the thermometer in the axilla falls in proportion to the coldness of the water employed; but if the temperature of the interior of the body be taken in the anus, this is found to be normal, or only to fall a few tenths of a degree, and it only falls in any important degree when the experiment has been pushed to an extent which dare not be approached in therapeutics; but then the innervation of the heart and lungs becomes seriously implicated, and the bath cannot be prolonged without compromising life itself. A sound man therefore, plunged into cold water, maintains the mean normal temperature of his blood notwithstanding the increased abstraction of heat from his surface, and he does so by an increased production of heat, which persists for a time, and is revealed when he is removed from the bath, dried, and clothed, by the production of that transitory febrile state termed the reaction, which is accompanied by a cutaneous temperature above the normal. Similar results occur in pathological conditions: a fever patient does not merely retain more heat than a healthy man, he produces it; instead of 37° C., his normal temperature is 39° C. or higher, and if he be plunged into a cold bath the results are similar. The cutaneous temperature is speedily brought down to that of the bath; the anal temperature falls only in a relatively insignificant amount, never more than one degree; and when removed from the bath the reaction occurs as in the physiological condition, so that at the end of two or three hours at the most, the initial temperature is attained or even surpassed. Even supposing, then, that this trifling and temporary lowering of the temperature, of a maximum of one degree, and lasting at the longest for two or three hours, should be considered desirable of attainment, it would be necessary to give the patient from ten to fifteen baths in the twenty-four hours, involving a most laborious practice for the attainment of a most trifling result.

There is one point, however, remarks Straus, upon which all the partisans of cold are agreed, and that is the sedative influence which the cold bath exercises upon the affections of the nervous system, and that this use of cold is most efficacious in delirium, cerebral affections, cephalalgia, singing in the ears, etc., and that it has thus a most favourable action in the malignant forms of fever, especially in the ataxic and adynamic forms. But, adds Straus, similar results have been obtained with much more certainty and energy by Currie's old method of cold affusion, which is more especially of the greatest value, and is specially indicated in an accident of extreme gravity which occasionally occurs in fevers—collapse.

It sometimes happens during the course of a fever that, when the thermometric ascension has reached its height, the temperature taken externally experiences à sudden fall from 40° or 41° to 34° or 32° C., while the anal temperature still maintains its former height. The skin is at the same time covered with a cold and clammy sweat, the heart contracts feebly, and the pulse becomes extremely feeble and thready. Such is the condition to which Wunderlich and his disciples have given the name of collapse.

The skin is chilled because the heart no longer has the force necessary to impel the circulation through it, the heart is paralyzed, and the lungs also, as seen in the short, superficial, often unequal and intermittent respirations, and revealed on auscultation by the gradually-increasing engorgement of the lungs and the accumulation of the bronchial secretions, which the patient has no longer power to expel, exactly as happens after section of the pneumogastric nerves. And this collapse no doubt does arise from paralysis of these nerves, or rather of those nervous centres which preside over the functions of respiration and the production of heat, and it is these centres which it is so important to rouse by reflex excitement. The readiest method of doing this is the cold douche: a waterproof sheet is slipped under the patient, his shirt is removed, and he himself raised to the sitting posture, and a pitcherful of water, at a temperature at or a little above 10° C. (50° F.), is then poured over his head from a height of from one foot and a half to three feet. The result is marvellous, and is one often, nay, almost daily, observed in the clinique of Professor Hirtz. The patient, plunged in stupor, is suddenly roused by the shock; he draws a long breath; the respiration becomes fuller, freer, and more regular; the cardiac ataxy ceases, and the pulse becomes fuller and stronger; traced by the sphygmograph during the collapse, it presented a horizontal line, hardly broken by a few feeble undulations; during the affusion the line of ascension is reproduced and becomes well marked, showing increase of cardiac force, and also of arterial tension. The affusions should be repeated during two or three minutes; when finished, the patient is dried, laid down and covered up, the waterproof being removed. The thermometer, now applied in the axilla, shows that the external chilliness has disappeared, and that the temperature there is now normal or even higher, the anal temperature being considerably reduced. The temperature has, in fact, been redistributed, and the equilibrium between the external and internal temperature restored, the rupture of which is in a measure characteristic of the condition of collapse. The lungs, too, are now found to be acting freely, the râles are diminished, and the passing congestion is disappearing.

It is easy, however, adds Straus, to understand the physiological action of this mode of treatment; cold employed in the form of affusion—that is, quickly and temporarily—acts not by subtracting heat, for the amount actually removed is perfectly insignificant, but by exciting, by its powerful and energetic reflex action, the nervous centres which preside over and regulate the circulation and production of heat. While acknowledging, therefore, the utility of Currie's cold affusions in febrile nervous affections, delirium, ataxy, and even in collapse, and also the advantage and propriety of cold sponging in refreshing the patient, and in cleaning and exciting the skin, Straus regards the use of the cold bath in the treatment of fever as a most expensive, troublesome, and possibly dangerous mode of producing very trifling results, and as far inferior to the use of such antipyretic remedies as quinine and digitalis, adding that a single draught of one gramme (15 grs.) of digitalis would lessen the fever more than a whole series of cold baths.—*Bullétin Général de Thérapeutique Médicale et Chirurgicale,* March 1872.

COEXISTENCE OF SMALLPOX AND COWPOX.—Recently a Mr Furley has been announcing in the public prints that to cure smallpox it is sufficient to vaccinate the patient, the mere entrance of the vaccine lymph into the system, according to him, sufficing to annihilate the variola. In this he has been anticipated by a Dr Tynedale of New York, who, in the New York *Medical Record* of 1st March 1872, made a similar statement. Dr T. has recorded several (nine) cases in which vaccination during the primary fever sufficed, according to him, to cut short the variola. All of these cases had, we believe, been vaccinated previously at some anterior period of their lives; and when we reflect how variable the effect of the variolous poison is, even upon those unvaccinated—Sydenham himself stating that sometimes it produces a variolous fever alone, at others a fever with an erythematous blush, and at still other times a fever, a blush, and a papular or pustular eruption of varying intensity—when we further reflect on the undoubted prophylaxis which a previous vaccination exercises over a subsequent attack of smallpox, reducing the mortality from 50 to 2 or 3 per cent., and modifying the course of the disease in an indefinite manner, sometimes preventing it passing beyond the stage of mere fever, and at others drying it suddenly up when it has already reached the pustular stage,—we think the effect of vaccination in cutting short a variola already commenced will be more properly referred to the still-abiding influence of a previous vaccination, or to the coexistence of some of those unknown constitutional conditions which occasionally sufficed to modify variola when vaccination was still unknown. And this idea is confirmed, when we find that one of the most accurate of observers and most painstaking inquirers, Sir James Simpson, found that variola and vaccinia might exist simultaneously without the one modifying the other; that death from variola might even occur while the vaccine eruption was fully developed; and that, in order that the one should modify the other, its eruption must have the start of the other by at least three or more days.—Vide *Ed. Med. Jour.*, Sept. 1854, p. 276.

XYLOL IN SMALLPOX.—This new hydro-carbon ($C_8 H_{10}$) was first separated from coal-naphtha by Dr Hugo Müller, and has been recently introduced as a remedy for smallpox by Dr Zülzer, of La Charité, Berlin. It has been given in capsules containing 3 to 5 drops for children, and 10 to 15 for adults; and, according to him, was employed with "complete success." More recently, Dr Burkart of Stuttgart has stated the following conclusions to be those he has arrived at in regard to its use:—1. In varioloid and simple variola xylol is superfluous; there is no remedy which can hasten the eruption, or shorten the course of this disease. 2. In confluent variola, xylol has no influence any more than other antipyretics. Death in such cases occurs from interference with the functions of the skin, just as in extensive burns, and xylol is no specific for this. On the other hand, xylol has an undoubted influence on the angina and eruption in the throat, and enables the patient to continue to take nourishment freely to the last, being far superior in this respect to any other kind of gargle or spray. It is also a most efficient deodorizer, and therefore presumably a disinfectant. 3. In septic variola a few isolated cases recover even without treatment. In the severe forms treatment is of no avail.—*Berliner Klin. Wochenschrift*, No. 18, April 1872.

[These results exactly coincide with those obtained in the treatment of variola in the Edinburgh Infirmary. To obtain this good result, the xylol must be given in a mixture, and sprayed over the throat and surface of the body; capsules are useless, and often excite vomiting. Probably xylol may prove also serviceable in the angina of diphtheria, enabling the patient to take nourishment, while in that disease also its efficiency as a deodorizer cannot but be useful. --ED. *E. M. J.*]

A NOVEL PLAN FOR SOOTHING CHILDREN.—Dr Cowran says, in his *Medical History of the Himalayas*, speaking of a native tribe in the northern district of the peninsula:—

"The women are larger and fairer than their sisters of the plains; and they have a curious plan of quieting their children while absent from them in the fields or elsewhere, which is as simple as it is efficacious, and which baby-farmers and others might imitate with advantage nearer home. When a mother goes into a field to work is otherwise unable to take her child with her, she selects some sheltered spot near a stream, in which she places a little straw for a bed for her infant, and then directs, by means of a piece of split bamboo, a current of water, of from one to two or three inches in diameter, on its uncovered occiput and temples. This produces a soporific effect, which generally lasts as long as the water continues to flow. The sleep is said to be very soothing, and children who have been much subjected to its influence are known to have been unusually free from the annoyances incidental to the period of dentition. I came upon a mother thus engaged, on my way to Cashmere, in the hot season of 1867, and she was so entirely absorbed in her occupation as to be, for some time, quite unconscious of my presence. During this interval I noticed that, while holding the child with one hand and dabbling water on its head with the other, she now and again rocked it to and fro, and sang at the same time, in a soft plaintive voice, an air which reminded me of the old nursery rhyme, 'Shoho, lullaby, go to sleep baby,' and recalled to my memory with tenfold force the saying of the great dramatist, 'One touch of nature makes the whole world kin.' As soon, however, as she noticed me, she snatched up her infant, and skuttled away down the ravine with a rapidity of force, which every moment threatened both with destruction."

Part Fifth.

MEDICAL NEWS.

Dr J. Bell Pettigrew, F.R.S., is at present engaged in delivering a weekly series of lectures on "The Physiology of the Circulation in Plants, in the Lower Animals, and in Man," before the Royal College of Surgeons, Edinburgh. Dr Pettigrew has already acquired a very considerable reputation by his anatomico-physiological publications, particularly those on the "Arrangement of the Muscular Fibres of the Vertebrate Heart," on the "Relations, Structure, and Function of the Valves of the Vascular System in the Vertebrata," and on the "Physiology of Wings,"—all of which exhibit in a very marked manner that originality of mind which leads him to place the most commonplace phenomena in a novel light, as well as that depth of philosophic comprehensiveness and steadiness of purpose which permit no vague speculation, but compel him to unravel step by step the most complicated anatomical structures or physiological acts, till they are exhibited in all the clearness, simplicity, and accuracy of an algebraic equation. The present series of lectures, judging from the two that have already been delivered, are characterized by similar qualities, and will certainly contribute to establish his fame as "the most distinguished pupil of Goodsir."

We have much pleasure in informing our readers that the publication of these lectures will be commenced in our next number, and will be continued throughout the year.

SANITARY DEPARTMENT, GLASGOW.—We regret, for the sake of Glasgow, to learn that it is likely to lose the able services of Professor Gairdner, ostensibly for the sake of a paltry saving of £100 a year. The whole of the inquiry connected with this movement has been conducted without any communication with Dr Gairdner himself. At this he not unnaturally feels hurt, and has addressed a most temperate letter to the Lord Provost, which we regret being unable to find room for. So far as Dr Gairdner himself was concerned, the time devoted to sanitary affairs was simply thrown away, the paltry salary which he received being no more than a mere nominal acknowledgment of his services. For Glasgow, however, the services of so well-known and so experienced a sanitarian as Dr Gairdner were simply invaluable. The enormous amount of money thrown away in the necessary expenditure connected with preventible disease, and the pauperism thereby produced, is almost incalculable, though now and then we get partial glimpses of the truth, which are sufficiently startling. It is mainly to the inquiries of men like Dr Gairdner that the profession look for trustworthy data to determine the exact amount of this waste of money and of lives, and also to point out the best mode of saving both; and, for humanity's sake, we regret his loss of a position which was only valuable to himself for the scope it gave to the exercise of his philanthropy.

OBITUARY.—The late THOS. BARNES, M.D., F.R.S.E., of Bunker's Hill, was born in 1793, at Dockray Rigg House, near Wigton, and died in the 79th year of his age, at Bunker's Hill, on Sunday last, the 31st ult. Having chosen medicine as his profession, he became an apprentice of the late Dr Joshua Rigg of Wigton, at that time the only medical practitioner in the district. The office of a doctor's apprentice was no sinecure in those days, commencing his work at six in the morning and continuing uninterruptedly until ten at night, and often later. There were then neither druggists, veterinary surgeons, nor dentists in Wigton, and the doctor's apprentice was expected to take the place of all three,—to prepare and dispense medicine for men, women, and children, horses, cows, and dogs, to extract teeth, to supply coffee and pepper; and, in addition, he had to look after the doctor's horses and keep his books. After the usual term of apprenticeship, he went to Edinburgh in 1811, and entered as a student of medicine at the University. In 1815, he became a member of the Royal College of Surgeons in London, and then studied for some months on the Continent, visiting the chief pitals both in France and Germany, and attending several classes of the Paris Faculty of Medicine. It may here be mentioned, that he was present at the battle of Waterloo, and he used to relate many curious incidents in his adventures of that period, having had all his luggage and money stolen, and being left penniless and friendless in Brussels. On returning to this country he proceeded to Edinburgh, and after spending the winter 1816–17 attending the medical classes and doing hospital work, he took the degree of Doctor of Medicine at the University in August of the latter year. Whilst looking about him, a vacancy for a physician occurred in Carlisle, and his friends putting a strong pressure upon him; he came and settled here shortly after his graduation. He was at once appointed Physician to the Dispensary. Confining himself solely to the practice of medicine and to consultation practice, his progress was not rapid, but was sure. As a consulting physician, five-and-twenty years ago, there was no one to equal him in the northern counties. He was ceaselessly active, constantly on the move, an accomplished horseman, and fond of riding. The writer has heard him relate of his riding more than sixty miles a day, and how, on one morning, he rode from Carlisle to Keswick, and surprised the surgeon whom he had to meet in consultation at his breakfast. Ever anxious for the advancement of medical science, he was not backward in giving the results of his own observation, and contributed many valuable articles to the medical and scientific journals. It would be out of place here to give more than the titles of his medical writings, of which perhaps the best known were the following:—His graduation thesis, "On Erysipelas" (in Latin), published in 1817. His essay on "Abscess of the Lungs," read before the British Association, at Newcastle, in 1838. His "Biography of Dr Jackson, Inspector of Military Hospitals," published in the third volume of Transactions of the Provincial Medical Association; his papers on "Fever," "Variola," "Varicella," "Vaccination," "Hernia," in the *Edinburgh Medical Journal;* "On a Knife-Eater," in the *London Med. Phys. Journal.* He also published many papers of general and scientific interest. The "Topography of Cumberland and Dumfriesshire," in the *English Cyclopædia*, was from his pen. His paper "On the Meteorology of Carlisle for Twenty-four Years," was read before the Royal Society of Edinburgh in 1827, and procured for him the much-prized title F.R.S.E. He was elected in the same year as the late Professor Syme, and at the time of his death was one of the oldest Fellows.—*Carlisle Patriot,* April 5.

DR JAMES LUNDIN BROWN, who died at Malvern on the 2d May, was a graduate of the University of Edinburgh. After leaving college he carried on his medical education at the Edinburgh Infirmary, at St Bartholomew's Hospital, in the Hospitals of Paris, and, lastly, in Dublin. He entered the army in 1854, on the outbreak of the Russian war, and, as assistant-surgeon in the Rifle Brigade, 2d Battalion, went through the Crimean campaign. To the practical experience gained in that war he doubtless owed much of his surgical skill, while the hardships he underwent would largely aid in imparting to him that knowledge of men, and that genial sympathy with them, which formed so beautiful a feature of his professional life. After the Crimea, not liking the inactivity of Aldershot, he left the army, and took a country practice at Rickmansworth, Herts, where he remained five years. He then spent two years in travel and study, visiting Florence and Rome, and devoting himself mainly to art, the classics, and Dante. After this he settled down to practice at Malvern Wells, where he married in 1871; but, before the close of the year, he had the great misfortune to lose both his wife in childbirth and his child. After this sad event, he never applied himself again to the duties of his profession, and died, as has been said, early last month.

It is to be regretted that Dr Lundin Brown never published anything, as, from the stores of knowledge he had accumulated, his unusual powers of thought and of expression, and the fragments he has left, he could undoubtedly have contributed usefully to general literature; while, from his devotion to his profession, especially in certain departments, such as gunshot-wounds and diseases of the eye, he was possibly in a position to make valuable additions to medical science. He was a great student of theology, a science of which he was particularly fond. He was also a master of many tongues, being well versed in classics, and able to converse in the modern languages. Above all, he was eminently a good man, and, like so many physicians, was as a friend and father to his patients, many of whom (especially those of the poorer class) share with his relations the sorrow of his loss.

FAREWELL PRESENTATION TO A HOUSE-SURGEON OF THE ROYAL INFIRMARY.—At the end of the winter session, a meeting was held, by the clinical clerks and dressers in Dr Bell's wards, for the purpose of presenting Mr A. Watson Milne, their house-surgeon, with a testimonial on the occasion of his leaving. Mr Montgomery, who was called to the chair, expressed his gratification at the pleasant duty he had to perform. He thanked Mr Milne, on the part of those present, for his uniform courtesy and kindness, and finally requested his acceptance of a handsome case of Surgical Instruments, bearing a suitable inscription. The speaker was frequently applauded.

Mr Milne replied in a short but very feeling speech. We believe Sir William Fergusson to have been the last house-surgeon who received a similar testimonial.

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